TECHNOLOGY DEPARTMENT

TELEPHONE and Management ENGINEER

AUGUST
1954

V58 #8

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THE NATIONAL TELEPHONE MAGAZINE

FEATURING IN THIS ISSUE—

★ Toll is Due For Promotion, by C. D. Ingebrand
★ "Potpourri," by Ruth Richards
★ Line Equipment For Carrier, by A. E. Culbertson
★ Washington Bureau Reports, by Roland Davies

telephone directory advertising exclusively

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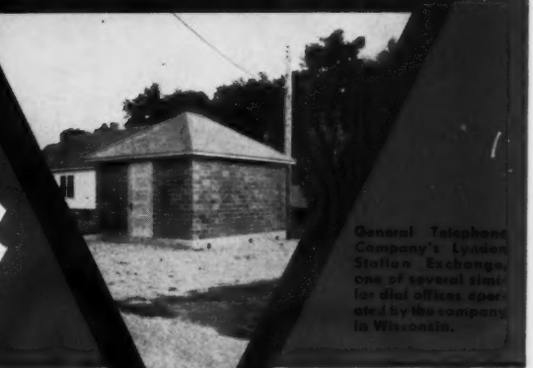
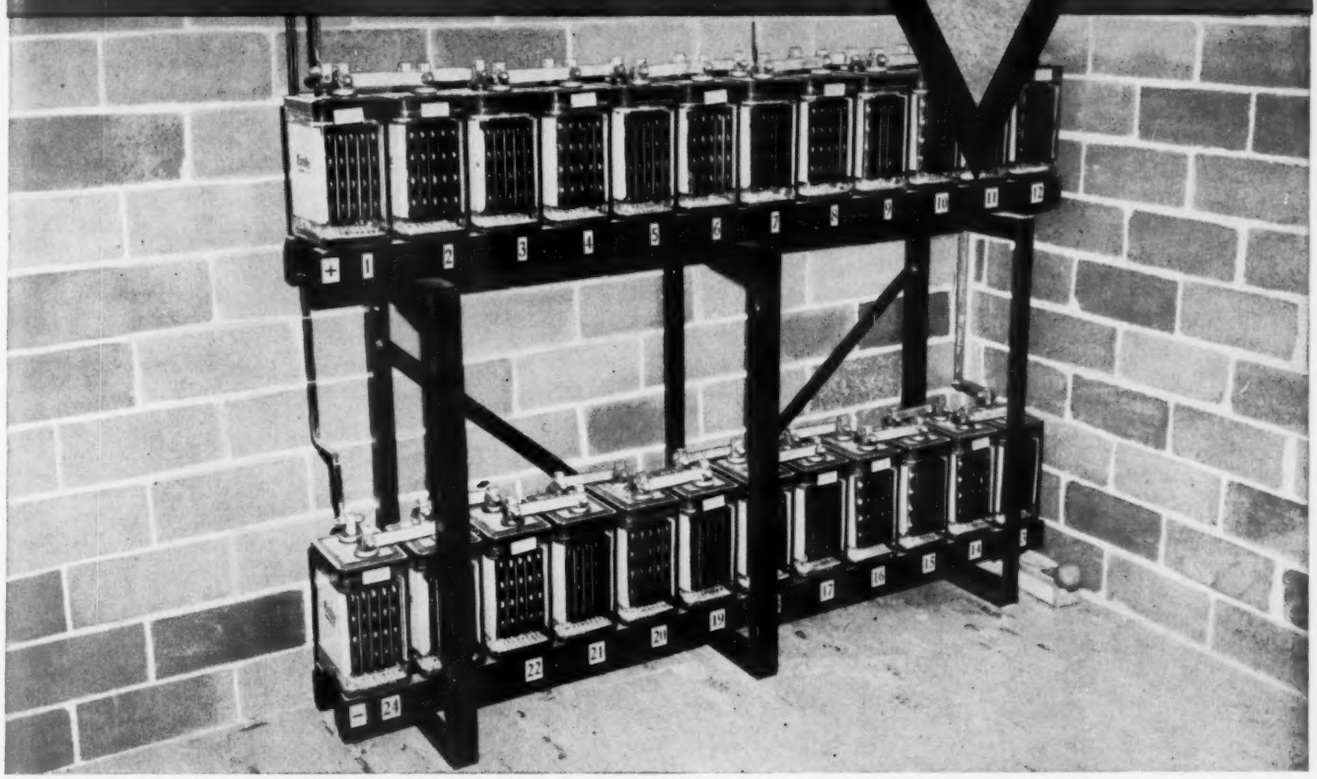
BATTERIES



General Telephone Company's Lyndon Station Exchange, one of several similar dial offices operated by the company in Wisconsin.



24-cell DME-11 Exide-Manchex batteries at the Lyndon Station office.

. . . AT THE LYNDON STATION EXCHANGE OF THE GENERAL TELEPHONE COMPANY of Wisconsin. The Lyndon Station Exchange is a typical community dial office serving part of our country's 50,000,000 telephones. At Twin Lakes, Land O'Lakes, Trevor and other places are similar design exchanges . . . with installations of 100 to 500 lines.

The dial equipment at Lyndon Station is operated by a bank of 24-cell DME-11 Exide-Manchex batteries.

Many telephone companies from coast to coast rely on Exide-Manchex batteries for all telephone applications. Long-lasting Exide-Manchex offers:

POSITIVE OPERATION: Dependable performance for all telephone battery requirements—central office and private exchange equipment.

ADEQUATE RESERVE POWER for emergencies beyond normal needs.

LOW MAINTENANCE COSTS: Water required about twice a year. No change of chemical solution needed during life of battery.

LOW DEPRECIATION: Sturdy, long-life construction which includes the exclusive manchester positive plate.

GREATER CAPACITY in a given amount of space avoids overcrowding of equipment.

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Various sizes and types of Exide Batteries are available in plastic containers.

Exide-Manchex is your best battery buy for all telephone services

Exide-Manchex batteries are different. Their famous Exide manchester positive plates are unique in design and construction, and are used *exclusively* in this outstanding storage battery.

1888 . . . DEPENDABLE BATTERIES FOR 66 YEARS . . . 1954

EXIDE INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2 • ***Exide Batteries of Canada, Limited, Toronto***

"EXIDE" and "MANCHEX" *Reg. T.M. U.S. Pat. Off.*

A

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Publication

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Advertising Director

JOHN G. REYNOLDS
Managing Editor

JOHN S. REED
Technical Editor

BILL CORMAN
Small Company Editor

RUTH E. RICHARDS
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ROLAND DAVIES
FRED HENCK
Washington Editors

DON C. SORENSEN
Advertising Manager

BRAND & BRAND
1052 W. 6th St.
Los Angeles, Calif.
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RAY W. SMITH
President
ROY F. SMITH
Vice President
DON C. SORENSEN
Vice President
JOHN G. REYNOLDS
Assistant Vice President

TELEPHONE and Management ENGINEER

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FRONT COVER

Groundbreaking ceremonies for General Telephone Co. of California's new central office building at Lancaster. (See "Cover Story" on page 20).

The National Telephone Magazine

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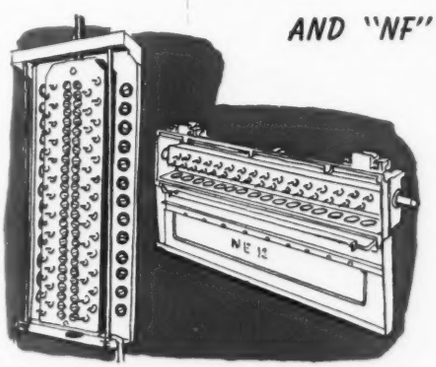
GraybaR TELEPHONE NEWS

WHEN A LINEMAN'S FIGURE WAS HIS FORTUNE

It's easy to see why telephone companies in the 80's might have kept a wary eye on employee waistlines—only a trim, athletic lineman could squeeze his way through the clutter of spokes, braces, cables, and tangled wire at the top of this typical open wire junction pole.

Crude beginnings to be sure, yet improvization of this type fathered many of the carefully-engineered cables, cable terminals, and accessories distributed by Graybar today. Here are just a few of these specialized items promptly available through our 109 strategically-located offices and warehouses.

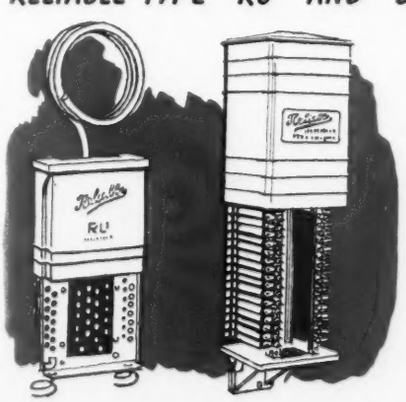
TYPE "NC" AND "NF" CABLE TERMINALS



An unprotected type, the NF terminal consists of a housing of cast aluminum alloy containing removable selectron binding post chamber and 24-gauge paper-insulated cable stub.

Similar in construction the NC unit features a built-in protector block, using the screw-in 107B protector. Both types are available in 10- and 16-pair cable-supported models and in a 26-pair unit for vertical pole or wall mounting.

RELIABLE TYPE "RU" AND "B" POLE-MOUNTED CABLE TERMINALS



A reversible unprotected terminal, the type RU unit can be installed either stub-up or stub-down. The flat fanning plate in combination with a cover surrounding the wires assures a weather-proof installation. 6-, 11-, 16- and 26-pair models.

The protected type B unit is equipped with Reliable's new self-cleaning sawtooth discharge blocks that eliminate carbon problems. Heavy silicon bronze binding posts insure freedom from season cracking. In 11-, 16-, and 26-pair models. 331-233

EVEN A GOPHER GETS INDIGESTION

In addition to protector mountings and protectors of many types, Graybar also distributes a wide variety of standard and special cables—even a type designed to be particularly displeasing to Gophers. Whether you need tape-armored, jute, galvanized-armored, corrosion-protected, or wire-armored submarine, there's a cable to meet the conditions in your locality . . . and Graybar can supply it.

For complete details on any telephone need consult your Graybar Representative.

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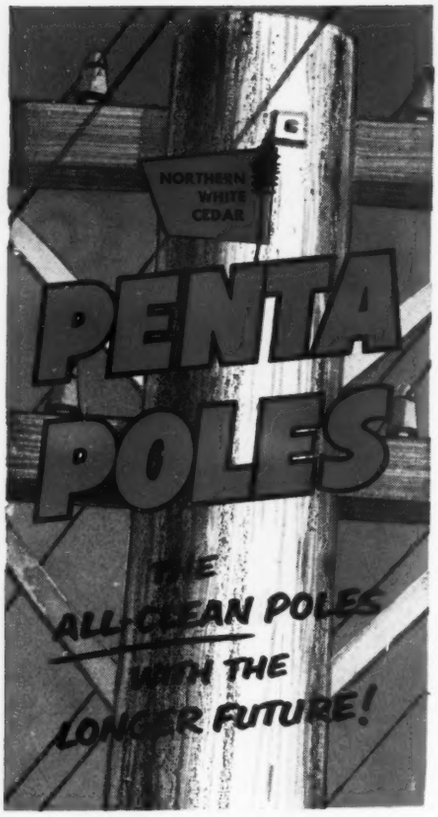

Nature grows them sturdy, with ample bearing at ground-line. Page and Hill adds years and years to their service expectancy. P & H Northern White Cedar Penta Poles mean low pole-line maintenance costs — higher yearly profits.

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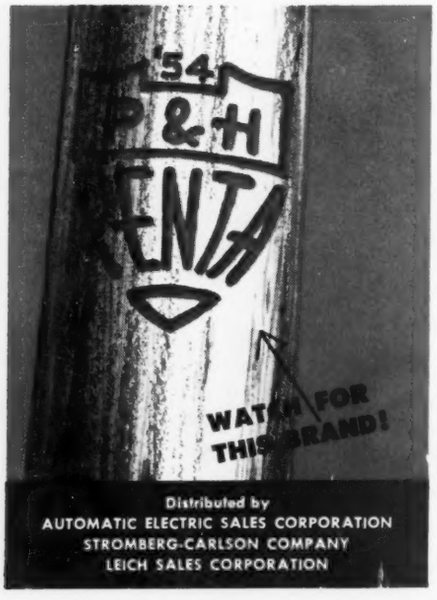

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—mostly about people

Across The Editor's Desk

New Company Magazine

WILLARD WADE, executive vice president of the California Interstate Telephone Co., and newly elected president of the California Telephone Association sent us Vol. 1 and No. 1 of Interstate's new company magazine. (?) A $25 Bond will go to the lucky employe who sends the name selected for the magazine. Don Wrysinski is editor and John Muir assistant editor. We want to congratulate Mr. Wade and his associates on a good job well done as the first issue merits that comment. Willard received an outstanding honor when he was named head of the California association succeeding *Charles F. Mason*, who served continuously in that position for 20 years.

So. Dakota Newspaper

CONGRATULATIONS to the South Dakota Telephone Association on their newspaper size report of their various assistant committees that aid their smaller telephone companies. *Walt Pirner*, secretary, can be justly proud of this report made under the name of president Kenneth Connors. The report, although lengthy, was well edited and gave all information regarding the schools, district meetings and activities of the committees. Telephone repairing and a Cable school were held during the year. The coming yearly convention is scheduled for November 11 and 12 at Sioux Falls.

West Coast Addendum

IN OUR LAST issue we reported on some of the things we saw and some of the people we talked with during the recent telephone conventions on the West Coast. Now I will report on something I did not get to see because of conflicting schedules. We were invited by *Mr. and Mrs. Roy Jarmon*, boss man of the General Telephone Co. of the Northwest, to visit them and inspect the new system they have in operation in their territory for customer toll dialing. We were unable to join *Warren Clay*, USITA president, who made the trip and visited the Jarmons. Warren was most enthusiastic over the outstanding job done by General in the area of Idaho and Montana and gave us a first hand account of his trip while attending the Portland meeting in June. Mr. Jarmon has prepared and published an outstanding booklet on this network and we feel sure he will send you a copy if you will address him at the offices of General Telephone Co. of the Northwest.

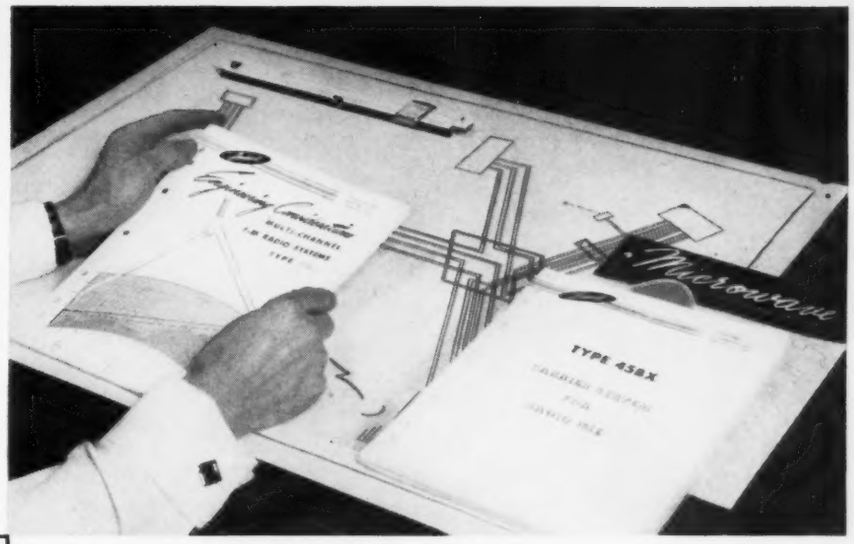
Carl Behnke Dies

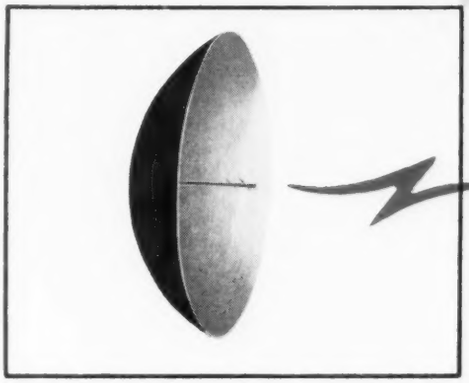
WE WERE SADDENED by the death of *Carl H. Behnke*, plant supervisor of the Alpena district of Union Telephone Co., Owosso, Mich. of a cerebral hemorrhage in June. In fact we had a June date with Carl to further explore Michigan's Au Sable River with Allen Crane and Austin Saunders following an inspection trip of the Michigan properties. Carl enjoyed an enviable reputation with his fellow workers and citizens of his community. He was a telephone man of the old school. His hobby of trout fishing was dear to his heart and we serve as witness that he could do more tricks with a fly rod than anyone we know.

Alexandria's Directory

JIM BOYD, general manager of the Alexandria (Minn.) Telephone Co., is a mighty proud manager these days. The new July directory of the company is now in the hands of the subscribers. The cover is a deep blue with reading matter in reverse white and truly gives one the impression of "the land of the sky blue water." The back cover of the directory calls attention to a new GREEN civic section in the center of the book. This green section is devoted to the city, its maps, trading area, sports and recreational features, historical data and important numbers of the civic government. Jim graciously gives credit for this latter idea to the Hawaiian Telephone Co., Honolulu, who used it in their 1953 directory. Oh yes, General Telephone Directory Co. sold and printed this directory.

Bridge the gaps on your toll routes





with a TYPE 45BX CARRIER SYSTEM for use with microwave.

The Lenkurt Type 45BX Carrier System opens up new sources of revenue which have been unprofitable or impractical with wire-line or cable equipment. With its relatively low initial cost, simple installation, and easy maintenance, certain gaps and extensions can now be bridged—practically and *profitably*.

The 45BX system uses the same basic miniaturized components and versatile plug-in assemblies as other Lenkurt 45-class systems. Since all units are easily accessible from the front, maintenance, repair, and testing can be done simply and conveniently.

And you save costly space, without crowding, because 24 to 36 channels with common equipment mount on a single 11'6" rack occupying only about 1.39 sq. ft. of floor space.

It will *pay* you to get the facts on the Type 45BX for use with microwave. Write us today—we'll send Circular TM-45BX-P8.

FACTS ON THE 45BX SYSTEM FOR THE TECHNICALLY MINDED:

When applied to radio links having a suitable modulation band-width, two 24-channel groups can be frequency-stacked to produce a 48-channel system within the band of 40 to 264 kc, while a 24-channel system requires a spectrum of only 40 to 140 kc.

*

An automatic channel regulator controls circuit net losses within less than ± 1 db.

*

Available for use with either built-in "out-of-band" signaling for dialing or ring-down, or externally applied "in-band" signaling for 1000/20 cycle a.c. ringdown.

*

Inter-channel crosstalk and inter-modulation products are restricted to better than toll quality minimum.

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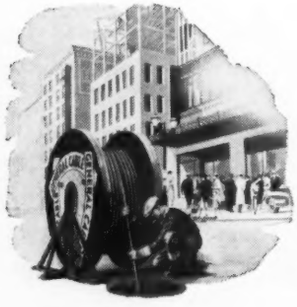
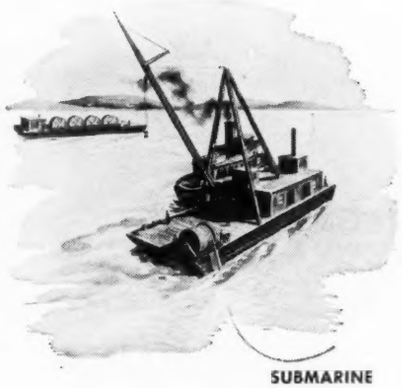


UNDERGROUND

AERIAL



SUBMARINE

BILLIONS OF PAIRED FEET ALREADY ON THE JOB

The country's only supplier of a complete line of telephone wires and cables, General Cable has, for more than 25 years, been the prime independent supplier of paper telephone cables to the independent telephone companies.

Measuring this fact another way, many billions of paired feet of our paper telephone cable are currently in service for aerial, underground, and submarine installations. Consider this as evidence, if you will, of complete dependability under every type of operating condition.

For full-line availability of paper telephone cable, check these General Cable types:

Aerial and underground duct service...paper insulated with lead sheath.

Direct earth burial...paper insulated, lead sheath, with jute or steel tape armor and jute.

Submarine installation...paper insulated, lead sheath, with round steel wire armor and jute.

All of the above types are manufactured in small sizes with concentric and in large sizes with unit construction. Composite and quad constructions available.

New Brochure gives complete facts fast! Write today!

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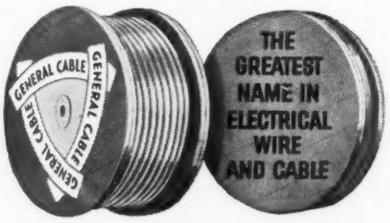


BARE, WEATHERPROOF, INSULATED WIRES and CABLES FOR EVERY ELECTRICAL PURPOSE

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*
ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

Dear Sir: August 15, 1954

CONCEPT OF FAIR RETURN ANALYZED AT STATE COMMISSIONERS' MEETING: – Concept of fair rate of return for regulated utilities from standpoint of investor – and the public – was analyzed for Mountain-Pacific states' public service commissioners in their conference at Sun Valley, Ida. recently, by John F. Childs, vice pres. of Irving Trust Co., New York. Mr. Childs said "telephone business (is) substantially less attractive than the electric business from the investors' point of view," after discussing factors of load building development, vulnerability to depression, operating characteristics, and wage component of operating expenses.

AUSTRIAN GOVERNMENT PLANS MULTI-MILLION DOLLAR TELEPHONE PROGRAM:–Dr. Karl Dworschak, director general of Austrian Posts & Telegraph Administration, announced that while at end of last year 220,412 stations in Austria were dial-operated compared with about 55,000 manual, job to be done is disproportionately greater than what has been accomplished. Dr. Dworschak said it will require about one billion schillings (about $40,000,000) to complete Austria's program.

NLRB MODIFIES RULE ON RIVAL UNION'S RIGHT TO CHALLENGE CERTIFICATION: – According to recent NLRB ruling, representation status of a union certified by National Labor Relations Board may be challenged by rival union within a year after certification if certified union's contract expires or is subject to renewal within that year. Ruling modifies strict rule against petitions for elections during first year after certification of a union.

At same time, NLRB reversed earlier rule that any contract made during the year after union's certification would bar holding of representation election among employes covered. Board held that contracts made during certification year will be subject to same rules as contracts made at other times.

TELEPHONE, TELEGRAPH FIRMS NOT AFFECTED BY NARROWING NLRB AUTHORITY: – 7 changes recently announced by National Labor Relations Board (NLRB) in its standards for determining whether board will take jurisdiction of case will not alter board's handling of cases involving telephone & telegraph companies.

While NLRB has narrowed its jurisdiction, it will continue to assert interest in public utilities. NLRB's scope was reduced generally by increasing dollar amount required in interstate business before a company could be considered coming under NLRB authority.

NORTHWESTERN BELL TO INSTALL NORTH DAKOTA MICROWAVE LINK: – Northwestern Bell Tel. Co. received FCC authority to supplement telephone facilities between Fargo, N. D., & military base near Finley, N. D., by in-

stalling microwave relay equipment to provide one message channel in each direction & one channel in each direction for protection. $117,450 project, involving 2 intermediate repeater stations, will provide 24 telephone circuits.

SOUTH DAKOTA CO-OP GETS $1,717,000 FARM TELEPHONE LOAN: – REA approved $1,717,000 loan allocation for Sully Buttes Tel. Co-op., Highmore, S. D. Co-op plans to acquire properties now furnishing service to 1079 subscribers over 800 miles of line, & will build 1206 miles of new line, rebuild 390 miles to serve ultimate total of 2120 subscribers.

Callensburg, (Pa.) Tel. Co. received $114,000 loan allocation to add facilities for 86 subscribers & convert to dial operation. Company now provides magneto service to 215 subscribers.

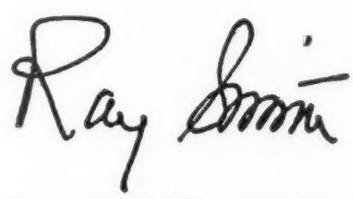
Second loan of $85,000 went to Oregon Tel. Corp., Mt. Vernon, Ore., formerly Dayville-Canyon Tel. Co., for building additional central office, & 32 miles of line to serve 175 subscribers not included in first loan of $250,000. Company anticipates total of 761 subscribers when system is completed.

Amary (Wis.) Tel. Co. granted $643,000 loan for improvement & expansion of system. Company now serves 1259 subscribers, plans to purchase 3 other small companies serving total of 271 subscribers, to rebuild 223 miles of existing line, & construct 54 miles of new line.

$351,000 loan approved for Parker Valley Tel. Co. of Ariz. to improve & expand service in Yuma County & parts of San Bernardino & Riverside counties, Calif. This is first telephone loan approved by REA for Arizona. Company plans purchase of small company serving 162 subscribers, dial conversion program & rehabilitation of facilities to ultimately serve 564 subscribers.

EXPANSIONS & IMPROVEMENTS: – Chouteau (Okla.) Tel. Co. plans $200,000 expansion program, to be financed in part by $162,000 REA loan . . . Snelling (Calif.) Tel. Exchange plans conversion to dial by March, 1955 . . . Olds (Ia.) Mutual Tel. Co. completed $25,000 conversion program . . . Calhoun City (Miss.) Tel. Co., Inc., cut over new system to serve 600 subscribers in area . . . Ruidoso (Tex.) Tel Co. cut over to dial operation as climax of $200,000 building & remodeling project . . . Grant County Tel. Co., Sheridan, Ark., put new $80,000 dial system into operation recently . . . West Coast Tel. Co. scheduled conversion of Vernonia, Ore., exchange for May, 1955 . . . Central Iowa Tel. Co. completed dial conversion project at Marengo, Ia., exchange . . . General Tel. Co. of Ill. converted Saybrook (Ill.) & Belvidere (Ill.) exchanges to dial operation . . . Elnathan Gates, vice pres. & gen. mgr. of Minnesota Tel. Co., announced company is constructing $852,667 dial system to serve International Falls (Minn.) area.

HIGHLIGHTS: – Hoopeston (Ill.) Tel. Co. celebrating its 50th year in business under ownership of the Boorde family. Present owners are J. R. Boorde & Mabel Boorde Harris . . . Watertown (Minn.) Tel. Co. recently observed its 50th anniversary.

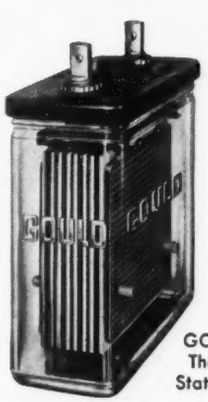


Ray W. Smith, Editor

POWER PACKED ACTION

for Telephone, Alarm
Switchgear and Emergency Applications

THANKS TO BATTERY POWER!



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The Aristocrat of
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When you need stand-by power, you need it instantly. That's why we recommend Gould Planté. Buy these remarkable stationary batteries today and they'll deliver power-packed action when you need it even 20 or 30 years from now . . . and longer! For Plantés have positive plates of PURE LEAD which constantly renew active material as they float. Their amazing service life makes them the lowest cost stationary batteries you can buy. Standardize on Gould Planté.

Always Use Gould-National Automobile and Truck Batteries

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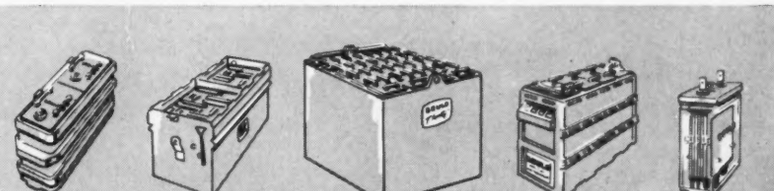

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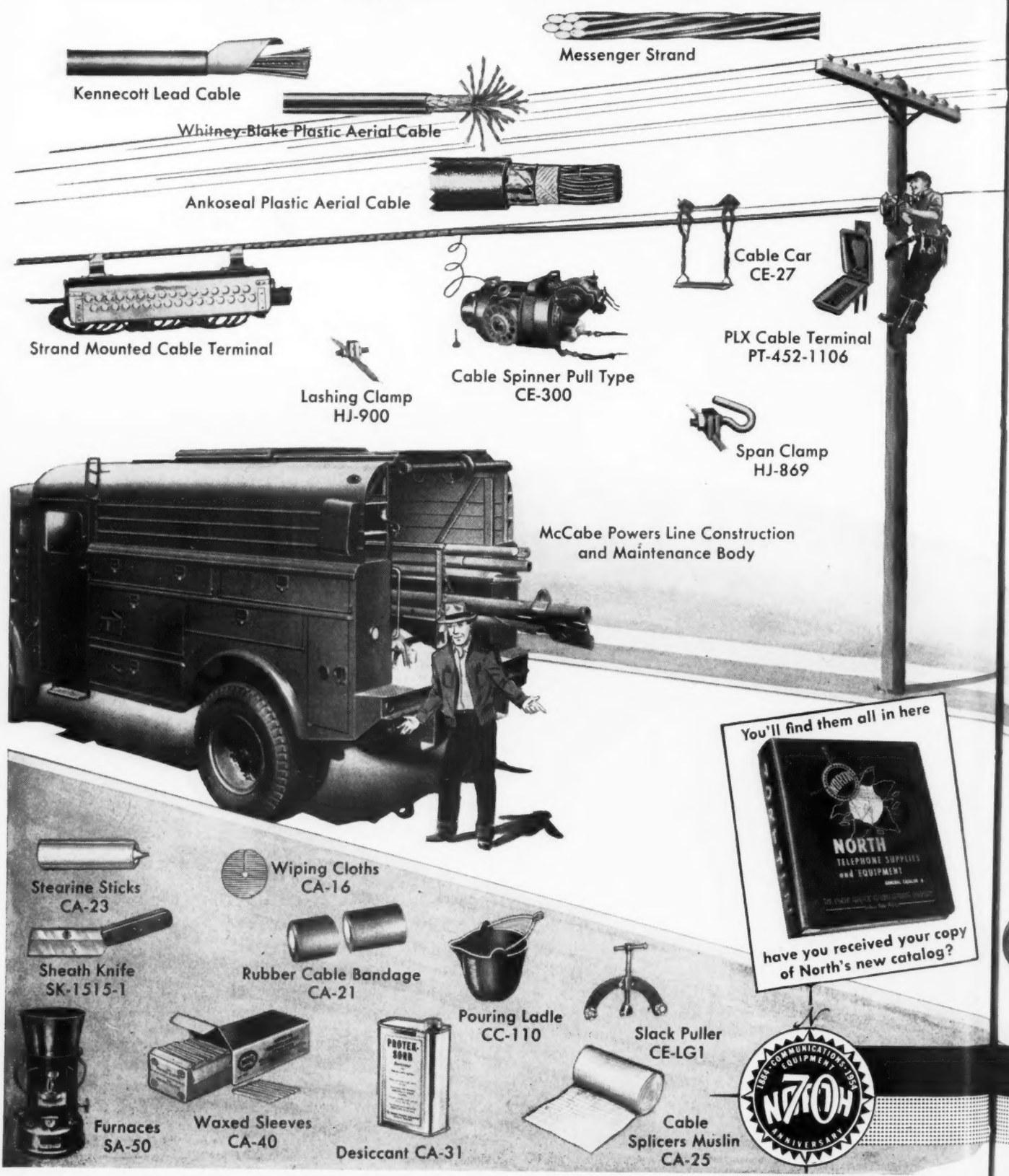


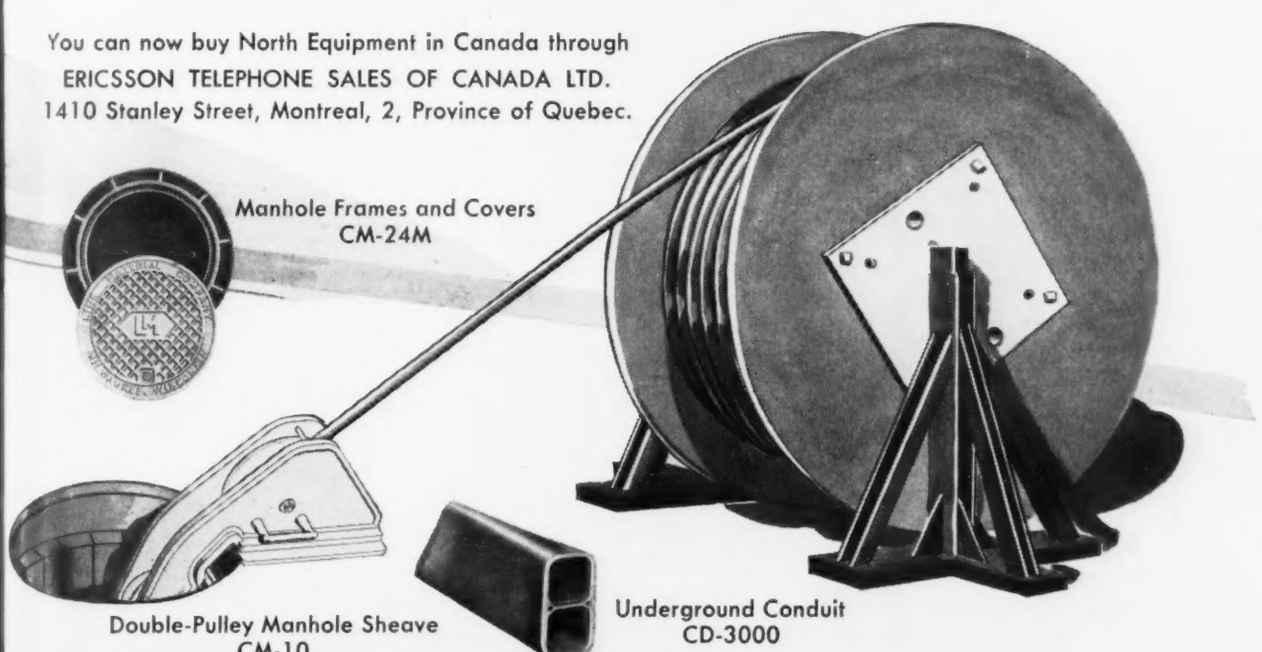
and SUPPLIES

For that important plant construction, uppermost in your mind these days, whether it's overhead or underground, if cable is involved you will find *everything* you need in North's complete national-brand line. Every type of cable, from tailored lengths to reel lots, tools, hardware and accessories for any job are available for prompt delivery.

The fact is that each need you may have, from pole tags to construction or service truck bodies, will be filled to your best satisfaction by ordering from North's complete and convenient catalog, a few typical items from which are illustrated herewith. You can depend upon the best quality, service and price . . .

from NORTH

You can now buy North Equipment in Canada through
ERICSSON TELEPHONE SALES OF CANADA LTD.
1410 Stanley Street, Montreal, 2, Province of Quebec.



Manhole Frames and Covers
CM-24M

Double-Pulley Manhole Sheave
CM-10

Underground Conduit
CD-3000

THE NORTH ELECTRIC MANUFACTURING COMPANY

655 South Market Street • Galion, Ohio

Industry NEWS Briefs

This is your department. The editor wants news regarding your company. Send news items and photographs to News Briefs' Editor, 7720 N. Sheridan Road, Chicago 26, Illinois.

Newspaper Reviews History of Orange County (N.Y.) Tel. Co.

THE MIDDLETOWN (N.Y.) *Times Herald* recently gave feature-story treatment to the Orange County (N.Y.) Telephone Co. Referring to the Orange County company as a pioneer in the telephone field, the newspaper stated — "From its founding nearly 60 years ago to its present leadership as the fifth largest within the 115 company New York Independent telephone field, the Orange County Telephone Company has been significantly typical and yet, in ways, unique."

"Last year," the *Times-Herald* reported, "with nearly 14,000 stations, it became one of the 75 Independent companies in America to pass the one million dollar mark in annual gross operating revenue."

The Orange County Telephone Co. was founded on August 5, 1895, by a group of businessmen led by Dr. Edwin Fancher.

Growth was painful as the young organization began to absorb the many small rural lines (often built by doctors and operating as totally self-contained neighborhood gossip and emergency services). It stretched wires from Middletown into the country like a bridge connecting a chain of islands to the mainland. Well meant mistakes folded many companies before their lessons could be understood. It is agreed by officers and veteran employes today that Dr. Fancher's great value to the company was his ability to spot a mistake, learn from it, reverse company policy to meet a new problem and ignore shortsighted irrelevancies.

As the group's first vice president

CONSULTATION:—JOHN AYERS (r.), 81 year old pioneer of the telephone industry, discusses latest cable routing plans with his successor, ALTON BRADNER. Mr. Ayres retired as plant manager in 1947 with the longest service of any company employe, nearly 52 years, and is still an active consultant on problems in plant operation.— (Middletown TIMES HERALD photo.)

(Albert B. Wilbur was president, George A. Swalm, Jr., secretary, Frank Harding, treasurer and John L. Wiggens, attorney) Dr. Fancher vigorously opposed a policy of issuing free telephones to stockholders. This practice was not uncommon in the 1890's.

In November of 1908, Dr. Fancher bought 85 percent of the common stock and was elected president; that control still remains in the Fancher-Chappell family. His first action was to suspend that misdirected charitable instinct and his subsequent policies transformed a company into a major Middletown industry. The utility was able to show the profits its services had even then promised; rates were kept low and prudent expansion doubled, then tripled, available service.

From 50 stations in 1896 there were 1,610 in 1910, 4,249 by 1925, 8,390 by 1945 and 13,857 at last count, in April.

General of Kentucky Installs 65,000th Phone

The General Telephone Co. of Kentucky installed its 60,000th telephone

GROWING HOME:—The main plant and offices of the Orange County Telephone Co., Middletown, N. Y. The far right of the front section houses the original building built in 1914, though the facade and near wing date from 1929. The third section, built in 1936, is distinguished from the new rear of the building, built in 1946, by a color difference of the brick at left. Another rear addition is expected to be necessary within five or six years.— (Middletown TIMES HERALD photo.)

Four-wheel-drive INTERNATIONALS provide new standards of efficiency and stamina for a wide variety of public utility jobs. Shown is an R-160 (4x4) with service-utility body, winch, and pole setting equipment.

MEET MISTER 4X4!

INTERNATIONAL four-wheel-drive trucks bring to public utility operators entirely new 4x4 performance and efficiency. These new four-wheel-drive trucks combine famous INTERNATIONAL stamina, long life, and operating economy with everything that's new and best in 4x4 design.

A two-speed transfer case affords eight forward and two reverse speeds, permitting movement of men, tools, and equipment over all kinds of terrain. *Two transmission power take-off openings allow operation of front-mounted winch, hydraulic hoist, or other auxiliary equipment. There is provision for mounting a third power take-off on the transfer case.*

INTERNATIONAL 4x4 trucks have everything it takes for tough public utility assignments, plus extra easy steering and handling, famous driver-designed Comfo-Vision cabs. Study the extra-value facts shown here, then get complete details from your INTERNATIONAL Dealer or Branch.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

America's Finest Four-Wheel-Drive Trucks

Two chassis models: Model R-140 (4x4), 130- and 142-inch wheelbases, GVW rating, 11,000 pounds. Model R-160 (4x4), 154- and 172-inch wheelbases, GVW rating, 15,000 pounds.

All-truck power: Both models powered by famous INTERNATIONAL Silver Diamond engines.

Transmission: Sliding gear selective type. Four speeds forward, one reverse. Power take-off openings on right and left sides.

Transfer case: Two-speed declutching type, providing eight forward and two reverse speeds, with manual disengagement of front axle for normal two-wheel-drive operation. Three-position shifting —high, 1.00 to 1; low, 1.87 to 1; and neutral. Provision for mounting full torque power take-off at rear of input shaft.

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

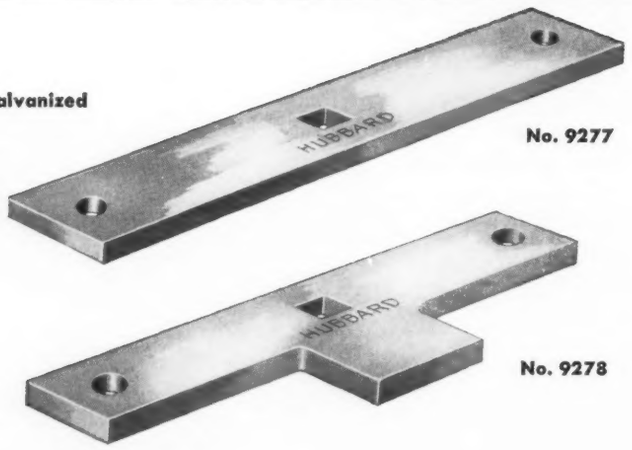
Better roads mean a better America

INTERNATIONAL® TRUCKS

"Standard of the Highway"

HUBBARD TANDEM TRANSPOSITION BRACKETS

Hot Galvanized



No. 9277

No. 9278

HUBBARD Tandem Transposition Brackets are universally used by the largest telephone companies in conjunction with transposition insulators. The transposed lines are crossed on a single bracket employing two pins, and mounted above the arm. Brackets are mounted sufficiently loose to swing freely during the operation of transposing the wires, and tightened when the job is finished. Tandem Brackets are normally used in lines having a span length of 150 feet or more. No. 9277 is used on straight lines or those with a "pull" of not more than 15 feet. No. 9278 is used where the "pull' is from 15 to 50 feet.

"Hang the load on Hubbard Hardware!"

OVERHEAD

Cable Suspension Material—Wireholders Pole Seats and Balconies—Clevises Braces—Drive Hooks—Messenger Dead Ends—Extension Arms—Long Span Material—Pins—Clamps—Guards—Stubbing Bands—Guy Protectors—Guy Clamps Pole Struts—Clips—Straps—Hangers Carriage Bolts—Rings—Transposition Brackets—Eye Bolts—Pole, Corner and House Brackets—Guy Hooks—Strain Plates—Storm Guy Straps—Lags—Machine and Hubeye Bolts—Sidewalk Guys REA Telephone Hardware

UNDERGROUND

Cable Racks—Manhole Ladders and Steps Pulling-in Irons—Expanding Anchors Cable Shields—Screw Steelwing Anchors Anchor Rods—Ground Rods and Clamps

HUBBARD AND COMPANY

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

on Feb. 20, 1953. Less than 15 months later it installed its 65,000th telephone, a gain of 5,000 telephones in a little over a year. Looking back over the records it is interesting to note that it took nearly ten years for the company to gain its first 5,000 telephones.

A considerable amount of cable and equipment has been installed to permit the addition of this number of telephones in a 15-month period. During the same time three of the company's exchanges have been converted to dial operation and plans are under way now to convert the Ashland exchange to dial next year. As of the end of April more than 60 percent of the telephones operated by the General Telephone Co. of Kentucky are on a dial basis and with the conversion of Ashland this will become approximately 80 percent.

The Lexington exchange is also celebrating the passing of a milestone — there are now 35,000 telephones in service in the exchange. While the population of Fayette County was increasing to the extent of approximately 5.8 percent the number of telephones has increased 16.7 percent.

Theodore Gary Chapter, ITPA Has 2nd Annual Barbecue

THE SECOND annual barbecue sponsored by Theodore Gary Chapter of Independent Telephone Pioneer Association, was held at Busch's Lake south of Jefferson City, Mo., June 26. Over 100 persons from all parts of Missouri were in attendance and voted it better than last year.

In spite of 100 degree temperature, a most enjoyable afternoon and evening was had. Some fished, some went swimming, but the majority just visited. The picture "Missouri, The Land of Diversity," sponsored by the Missouri Division of Resources and Developments, was shown.

Those in charge of arrangements were F. B. McHenry, Chapter president, George A. Hearne, Col. C. W. Gottry, Barbecue Committee members, and Miss Katharine A. Bauer, Chapter secretary-treasurer.

North Dakota Co-op To Improve 3 Rural Systems

FOLLOWING A favorable ruling by REA, dividing its plans into two parts, the Barnesville, (Minn.) Rural Telephone Co-op expects to start plant improvements in three North Dakota rural systems late this sum-

works like copper

IN VOICE OR SIGNAL TRANSMISSION---

IN LONG, RUST-RESISTING LIFE---

AND IT'S *more than twice as strong*

IT'S Copperweld LINE WIRE

TRADE MARK

Good electrical transmission and consistent, trouble-free service are essential in communication and signal lines. You can depend on Copperweld* Line Wire to provide these advantages—vitally important in building customer good-will and in reducing operating costs.

Because its thick copper covering and strong steel core are inseparable, Copperweld Line Wire has the rust-resisting life of solid copper. It retains its original voice and high frequency transmission properties which are better than any other high-strength conductor.

Copperweld's permanent high strength assures greater safety for long spans, with the stamina to resist heavy ice and wind loads. Construction costs are reduced because fewer poles, accessories and manhours are required.

When you build overhead lines, remember that Copperweld is the only wire that will give you the high conductance and long life of copper plus the rugged strength of steel. Write us today for engineering assistance . . . there's no obligation.

*Trade Mark

COPPERWELD STEEL COMPANY
Glassport, Pa.
SALES OFFICES IN PRINCIPAL CITIES

for safer long spans---
Copperweld Line Wire
TRADE MARK

SOLD BY LEADING DISTRIBUTORS

ACORN INSULATED WIRE

Quality WIRE for Every Telephone NEED

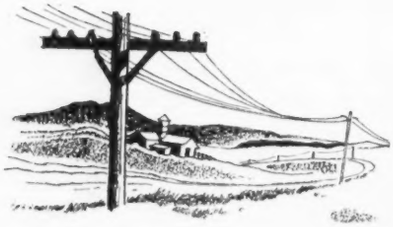
★ DROP WIRE
BRIDLE
SWITCHBOARD
TREE
GROUND
BURIED WIRE

★ INTERIOR
INSTRUMENT
POTHEAD
CABLE TERMINAL
FIXTURE
PLASTIC INSULATED

ACORN INSULATED WIRE CO., INC.
36 Freeman St., Pawtucket, Rhode Island
LEICH SALES CORP., 427 West Randolph St., Chicago.
LINDSAY TELEPHONE SUPPLY CO., 10409 Meech Ave., Cleveland 5, Ohio
NORTH ELECTRIC CO., 501 S. Market St., Galion, Ohio.

Drop Wire—Bridle—Interior—Tree—Ground—Switchboard—Pothead—Cable Terminal—Instrument—Fixture—Buried Wire

LONG LIFE



Winter or summer, in blizzard or in blistering sun, Armstrong's Glass Insulators give long, dependable service. Their tough industrial glass is at home in any climate. And they stand up under loads that will bend standard metal mounting pins. See your supplier or write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, New York.

ARMSTRONG'S GLASS INSULATORS
for communications . . . for power

mer. Originally the $517,000 loan for the co-op hinged on developments in both Minnesota and North Dakota, and over-all plans had hit a snag over "switching agreements" in Minnesota.

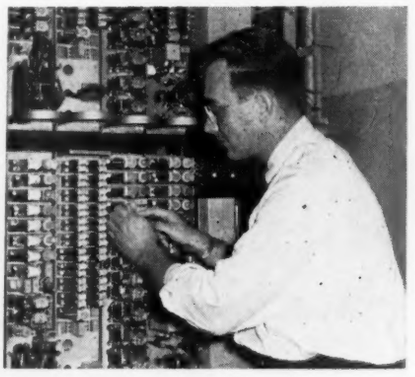
The communities to receive early improvement and dial installations are Colfax, Galchutt and Abercrombie, North Dakota, which systems the co-op has options to buy. Also scheduled for first-stage plans are Mooreton, N. D., and Kent, Minn., systems. Later stages of the co-op's long range plan include improvements for Rothsay and Rollag, Minn.

REA Approves Loan For Tennessee Co-op

REA HAS announced an allocation of $1,485,000 to the Ben Lomand Rural Telephone Cooperative, McMinnville, Tenn., to serve an ultimate total of 2959 subscribers.

The co-op will acquire property from several Independents, including the Southern Continental Telephone Co., serving a total of 918 subscribers. Approximately 382 miles of new line will be constructed, and 184 miles rebuilt.

The Central Oklahoma Telephone Co., Davenport, Okla., was given a $182,000 allocation to convert its existing system to dial, provide facilities to serve 211 additional subscribers now without telephones, and rehabili-



Delivery of director equipment to the dial offices in the Santa Monica and West Los Angeles exchanges of General Telephone Co. of Calif., has touched off a five and one-half million dollar program in the two areas in a major step toward customer toll dialing in the Los Angeles extended area. JACK PEDDER, equipment foreman for the company, is shown adjusting new relay equipment — contributing his time to the total of more than 200,000 man hours required for the installation. The director equipment installed in Santa Monica and West Los Angeles will handle 52,000 and 40,000 calls per hour, respectively, and it is anticipated that the equipment will go into operation the first quarter of 1955.

RELICS:—FRANK FANCHER, vice president and secretary treasurer of the Orange County Telephone Co., is shown with two early model telephones. Both are magneto operated pieces dating from the century's first decade. Part of the crank arm on the oak wall model can be seen at right. Mr. Fancher is holding Orange County's first desk model telephone; it was on his father's desk throughout his years as president of the firm and like its heavy companion would work today if cleaned up a bit. Mr. Francher is a collector of antiques and the ancient communications equipment shown here is only a part of his wide collection of ship yard models, fine dishes and furniture.—(Middletown TIMES HERALD photo.)

tate existing plant now serving 258 users.

The Coleman County Telephone Cooperative, Coleman, Tex., received a $540,000 allocation to build a system to serve 1110 subscribers, including 757 now served through telephone properties to be acquired as a nucleus for the system. About 240 miles of new line will be built, 178 miles of existing line will be rebuilt, and five dial central offices will be installed.

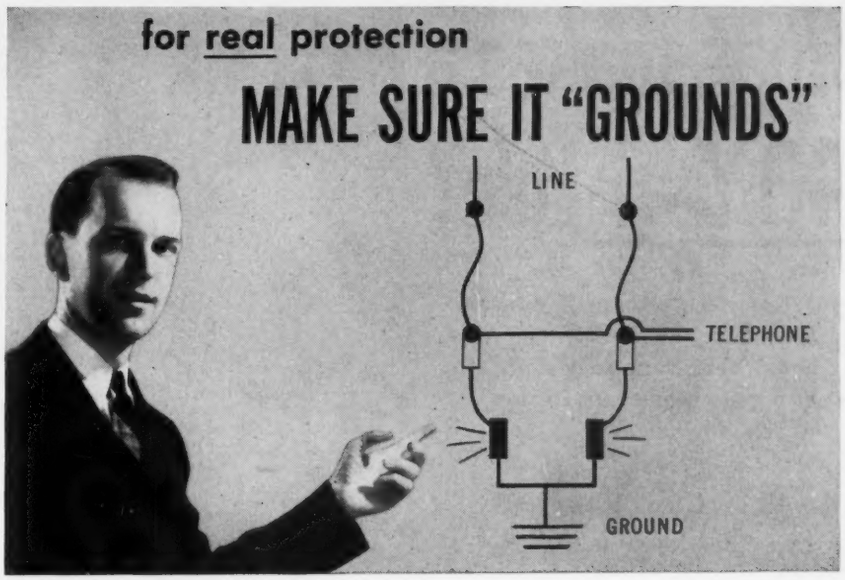
Mexicans Buy Bonds To Get Telephones

WHEN MEXICO CITY'S telephone system put a $1,764,000 bond issue on the market recently, citizens were less interested in the 10 per cent interest offered than in the offer of a telephone to every person who bought bonds.

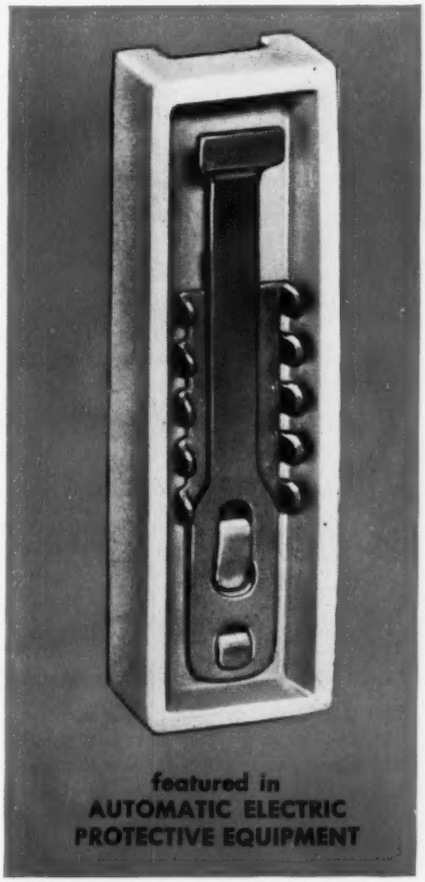
Bond issues were devised by the telephone company after the Mexican government refused to grant the company a higher rate than its flat charge of $1.40 a month. Without working capital, the company told applicants for service it could not produce telephones.

Then the company came up with the bond idea. Now more than 5,000 persons have new telephones and company bonds.

Purchase of a $40 bond entitles an



Insist on Automatic's
DOLLAR-SAVER Discharge Block



ELIMINATES COSTLY "CLEARING TRIPS": Exclusive bi-metallic strip grounds line on discharge—clears self after operation.

GIVES SUPERIOR POWER-CROSS PROTECTION: Keeps line grounded while cross exists; avoids burn-away danger. (With non-grounding blocks, the sawteeth and carbon blocks tend to burn away. Such blocks often become ineffective, as they protect only at constantly increasing potentials.)

FULLY TESTED: Takes 11,000-volt laboratory test with flying colors. On-the-job service proves its dependability beyond question.

Order Type 70 (for 3/8x1 1/4" carbons):

Cat. No.	Gap	No. per Pkg.
SC-10	.003"	50
SC-11	.0055"	50

"Have a good ground and you'll be safer"

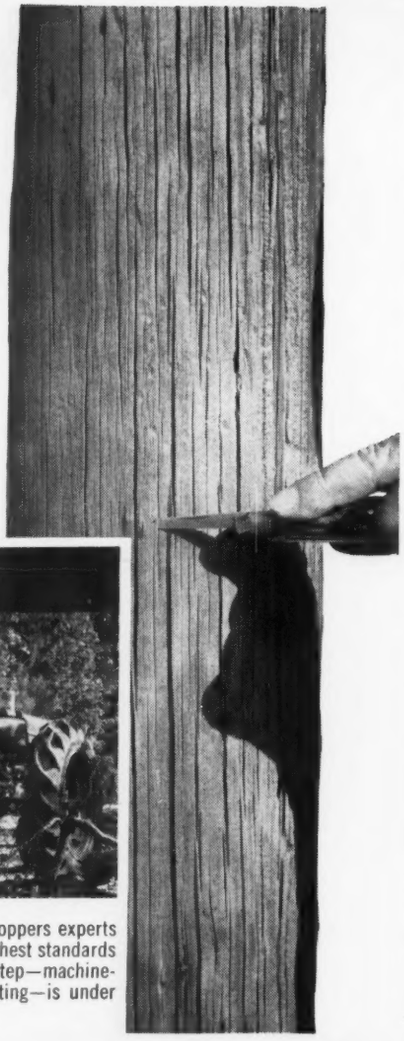
Product of the Telephone Specialty Department of

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

What makes a 40-Year Pole?

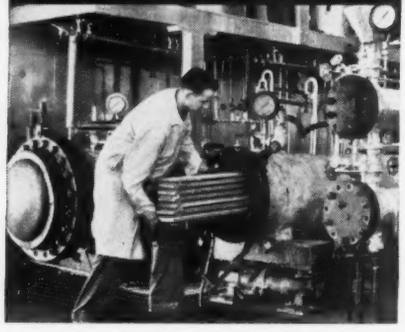
When it's a Koppers Pressure-Creosoted Pole, like the old-timer shown here, there's a *combination* of reasons which can be summed up by the phrase — "Koppers Quality Control."



QUALITY CONTROL

Koppers quality control starts right with the timber. Koppers experts approve a purchase only when the timber meets the highest standards of strength and straightness. Then, every other step—machine-peeling, stacking, seasoning, framing, pressure-creosoting—is under the strict supervision of skilled personnel.

LABORATORY RESEARCH



Quality control doesn't end with the sale or shipment of Koppers Poles. Koppers "quarrels with success" by carrying on a continuing program of research to make wood do an even better and more economical job for you. In one of the most complete wood-treating laboratories in the world, Koppers technicians conduct exhaustive tests on the prevention of wood deterioration.

DEPENDABLE DELIVERIES

In addition to supplying good poles, Koppers makes shipments on schedule. Koppers has many strategically located pressure-treating plants that have ample stocks to satisfy your requirements. Write for prices and further information on Koppers Pressure-Creosoted Poles.

KOPPERS COMPANY, INC.

KOPPERS **PRESSURE-CREOSOTED POLES**

® Wood Preserving Division, Pittsburgh 19, Pennsylvania

investor to have an old telephone transferred to his residence. The deal for a new telephone is based on $80 to $240 worth of bonds, depending on location and installation work.

With the first bond issue sold, the telephone company hopes to get government permission to issue 12 million dollars more.

Cutover Completed At Columbia, Ill.

THE MAGNETO telephone vanished from the Columbia, Ill., area when the new dial system was put into service. The conversion was witnessed by executives of the Harrisonville Telephone Co., who hold the franchise for telephone service in Columbia, Mayor A. C. Metter, who made the first call on the new system, and several businessmen and heads of civic organizations in Columbia.

The conversion is part of the company's improvement program which is estimated to cost from $100,000 to $150,000. The program included the installation of 42,000 feet of underground cable and will accommodate approximately 2000 subscribers.

Chase National Bank Names Vice President

THOMAS W. MCMAHON, Jr., was recently made a second vice president in the Public Utilities Department of the Chase National Bank of New York.

Mr. McMahon joined Chase in 1947 and the following year was assigned to the Public Utilities Department. He was appointed to the official staff in 1951 as an assistant cashier.

FRONT COVER

Mrs. Lorraine Robbins, who received the 5,000th telephone installed in Lancaster, Calif., by General Telephone Co. of Calif., turns the first spadeful of earth for the company's new central office building. A new dial automatic system will be installed to replace the present manual system. Participating in the groundbreaking ceremony are Carl Von Hake, Edwin M. Blakeslee and R. D. Collins, chief engineer, president and western division manager respectively, of General of California; Walter K. Robbins, husband of Mrs. Robbins; Frank Ashleigh, the company's commercial manager; and Byron Glenn, secretary of the Lancaster Chamber of Commerce.

· ANSONIA ·

Ankoseal®

THE ALL-PLASTIC CABLE

Trouble Free

(A CASE HISTORY)*

A southern telephone company is well pleased with the way Ankoseal came through an ordeal of lightning and bullets. There was plenty of lightning during the summer of 1953. Many direct strikes, but in no case were the Ankoseal cable lines damaged. The only repair job was removing eight shotgun pellets from the jacket of a cable which was done "quickly and easily".

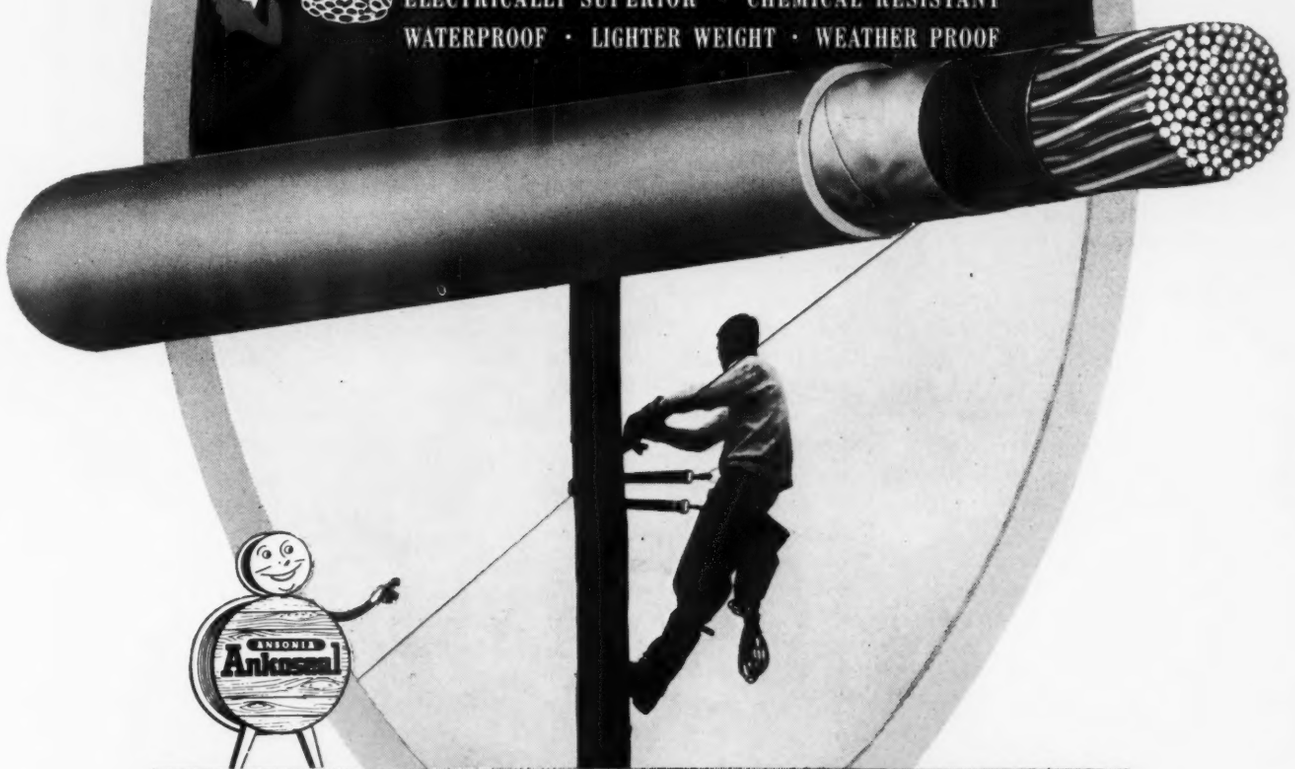
Let Ankoseal cut down "trouble" by specifying it now.

*Letter on file at Ansonia

ANKOSEAL ALSO IS—

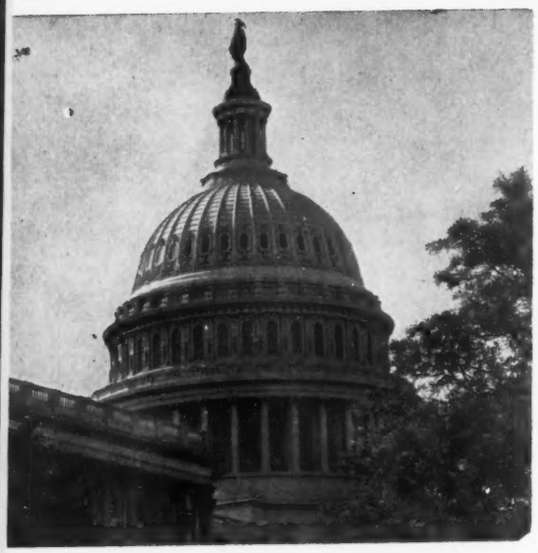
ELECTRICALLY SUPERIOR · CHEMICAL RESISTANT

WATERPROOF · LIGHTER WEIGHT · WEATHER PROOF



THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT



from the Capitol

Washington Bureau Reports

By ROLAND DAVIES & FRED HENCK

***NEW LEGISLATION** would eliminate government operation of business-type enterprises wherever possible . . . Plan to raise the limit of securities issues by small companies which must be registered with SEC blocked . . . REA issues new booklet on "Pre-Loan Procedure for Rural Telephone Companies."*

PROSPECTS that a Congressional policy, confirming the administrative decision of the Eisenhower administration to eliminate government operation of business-type enterprises wherever possible, will soon be written into law, were regarded as fairly good in the closing days of this year's session of Congress.

The House passed such legislation in a surprise action toward the close of the session, and the Senate Government Operations Committee had the question under consideration, with at least some possibility that the bill could be rushed into law before the legislators wound up their deliberations.

Even without final Congressional action, the situation comes the closest in history to establishment of such a legislative policy, with improved prospects for passage of a law in the future.

The bill as passed by the House delegates the task of receiving complaints on government competition with business, and acting on them where justified, to the Secretary of Commerce. As a result, it is wellnigh assured that if the measure becomes law, the Business & Defense Services Administration, the liaison agency between business and government, will get the job of processing complaints and recommended solutions.

BDSA has, since its organization in the fall of 1953, been somewhat of a "watchdog" for the Secretary of Commerce in matters relating to government competition with private industry, as it has been assumed that any consideration of the subject from an executive department viewpoint was the responsibility of the Commerce Department.

In the absence of any legislation, Commerce has been able only to advise other government departments in matters regarding competition.

The bill approved by the House provides that "Congress hereby declares that the policy of the federal government should be at all times the encouragement of private enterprise. Certain activities of the federal government have developed which tend to discourage private enterprise, in that the federal government is engaging in commercial and industrial activities in direct competition with activities engaged in by private persons for profit.

"These commercial activities engaged in by the federal government deprive governments at all levels of tax revenues, and by competing with private enterprise, weaken the strength of our national economic system. It is therefore the purpose of this act to provide for the termination, to the maximum extent feasible, of all commercial activities engaged in by the federal government in the United States which compete with private enterprise.

"It is declared to be the policy of the Congress that the federal government shall not engage in business-type operations competitive with private enterprise except where it can be demonstrated that it is necessary for the government itself to perform such operations in furtherance of national programs and objectives legally established."

The measure prescribes that "It shall be the duty of the Secretary of Commerce, acting under the instructions, rules and regulations issued by the President, to receive from the public and examine specific complaints of government competition with private enterprise and, where the facts warrant, consult and cooperate with officers of the government supervising the government business-type operations complained about in order to suggest, where appropriate, the termination or limitation of government competition through the utilization of private facilities, products, or services."

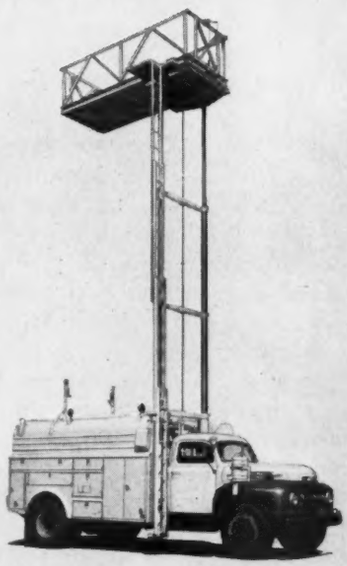
It provides specifically, however, that "nothing herein contained shall apply to any government business-type operations being carried on on the effective date of this act, or to any government business-type operations heretofore or hereafter specifically authorized by Congress."

On another Capitol Hill front, the viewpoints of regulated utilities were

POWERS American AERIAL EQUIPMENT

AERIAL TOWERS

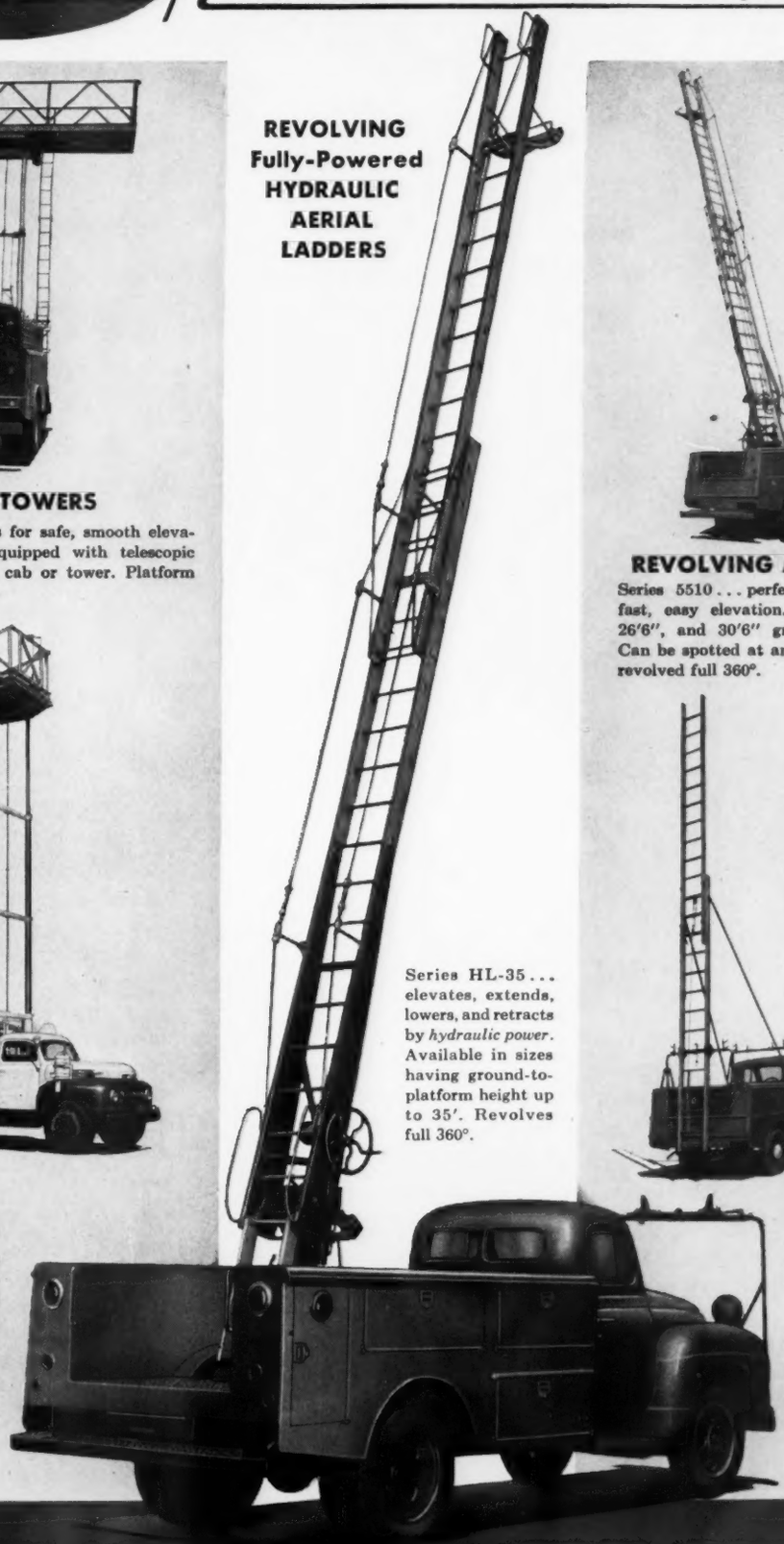
Series 7A-01 . . . in sizes for safe, smooth elevation to 21′ or 25′. Equipped with telescopic ladder. Operation from cab or tower. Platform revolves 360°.



HYDRAULIC AERIAL TOWERS

Series TW-2 . . . enables workmen to reach areas more than 35′ above ground. Can be operated from tower or truck cab. Platform revolves full 360°. Telescopic ladder is standard equipment.

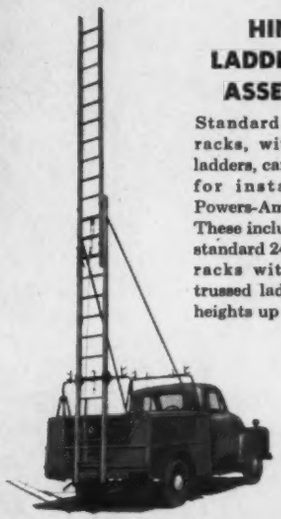
REVOLVING Fully-Powered HYDRAULIC AERIAL LADDERS



Series HL-35 . . . elevates, extends, lowers, and retracts by *hydraulic power*. Available in sizes having ground-to-platform height up to 35′. Revolves full 360°.

REVOLVING AERIAL LADDERS

Series 5510 . . . perfectly balanced to permit fast, easy elevation. In sizes having 23′6″, 26′6″, and 30′6″ ground-to-platform height. Can be spotted at angles from 30° to 75°, and revolved full 360°.



HINGED LADDER RACK ASSEMBLIES

Standard and special racks, with extension ladders, can be furnished for installation on Powers-American bodies. These include racks with standard 24′ ladders, and racks with braced or trussed ladders to reach heights up to 30′.

A descriptive bulletin is available on each item of aerial equipment in the Powers-American line. Bulletins, plus prices and complete details, are yours for the asking.

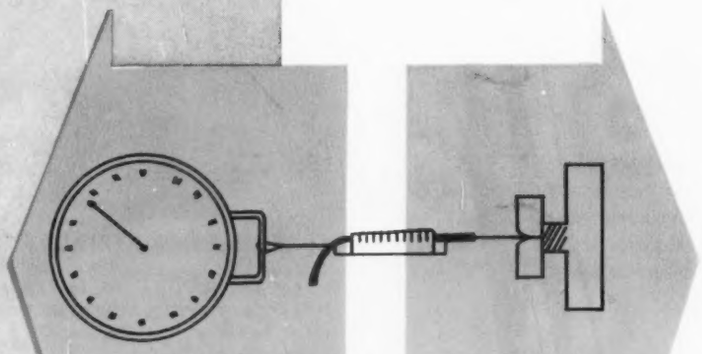
McCABE-POWERS AUTO BODY COMPANY

MAIN OFFICE
5900 NO. BROADWAY • ST. LOUIS 15, MO.

WESTERN OFFICE
428 LATHAM SQ. BLDG. • OAKLAND 12, CALIF.

ALPHADUCT

P clamp adhesion test



The conductor must break before it slips

P clamps are the most widely used method of attaching drop wire to buildings. Lest you may worry about a P clamp causing slipping of the insulation or jacket on Alphaduct Neoprene Jacketed Drop Wire — read about this Alphaduct service test. This test is made daily.

A sample of Alphaduct wire is inserted in a P clamp with 12 inches of the wire projecting from the top of the clamp. The bail of the clamp is then inserted in the upper jaws of a tensile testing machine, and the end of the wire is stripped free of jacket and insulation and inserted in the other end of the machine.

The jaws of the machine are then gradually separated until the conductor breaks. The conductor must break before there is ANY slipping of either the jacket or the insulation.

Don't have any worries about a little old P clamp hurting ALPHADUCT drop wire. Try Alphaduct. It's dated by a color coded thread so you can see for yourself how long it lasts, how much money it saves.

ALPHADUCT WIRE AND CABLE COMPANY • MILLTOWN, NEW JERSEY
NATIONAL DISTRIBUTORS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS
REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.
THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

recognized to some effect in the new tax revisions law, which if nothing else is one of the fattest documents to come out of Washington in some time.

Improved prospects of obtaining equity capital are seen in the bill's "start" toward removal of double taxation of corporation dividends. Although the personal income tax exemptions given investors with dividend income are not large — the first $50 of income will be excluded from tax, and a 4% dividends received credit also may be applied against the levy due — some incentive is offered for equity investment, and the provision may provide a somewhat different climate for persons with a few dollars to invest.

For companies in affiliated groups, the measure removes the 2% penalty surtax in consolidated corporation income tax returns from regulated public utility income. Thus, in a group with both operating and manufacturing affiliates, filing a consolidated return, the income of the operating companies would be subject to the 2% penalty. The provisions apply only to companies 80% or more owned by the parent.

Communications companies spokesmen, among others, scored a victory when the legislators decided in effect that payments received in lieu of wages from sickness and disability benefit plans are exempt from personal income taxation up to $100 weekly. A seven-day waiting period is required except where the wage loss results from injuries or where the recipient is hospitalized during the seven-day period.

SEC Legislation

THE EFFORTS of the Independent telephone industry, and a number of other organizations, to raise the limit of securities issues by small companies which must be registered with the Securities & Exchange Commission, have been unsuccessful for the time being.

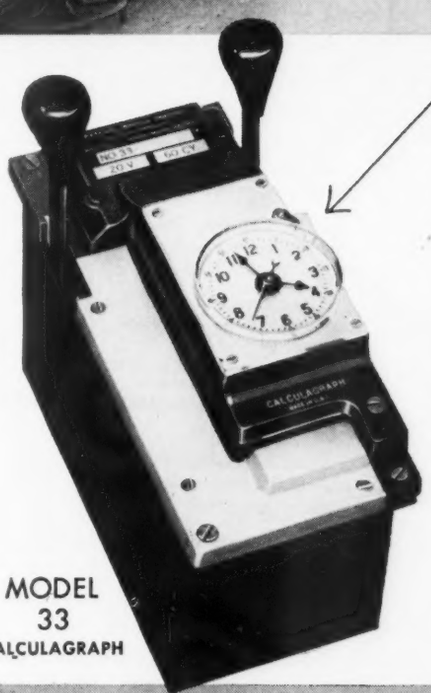
Joint House-Senate conferees considering the new SEC legislation decided to accept the House provision under which the present limit of $300,000 would be retained. The Senate had provided that only companies issuing more than $500,000 in securities in a year would have to register them with the commission.

It is anticipated that the subject,

Here's why *modern* exchanges use

CALCULAGRAPH

Photo Courtesy of STROMBERG CARLSON CO. and THE PENINSULAR TELEPHONE CO.



MODEL
33
CALCULAGRAPH

Busy exchanges throughout the world are using Calculagraphs because they produce quick, accurate, automatic toll time records. Accurate to-the-second, printed records eliminate switchboard detail work and assure you of collection of all revenue due on every call. CALCULAGRAPHS are precision instruments with high visibility clock dials, easy to operate—featuring smooth silent lever action.

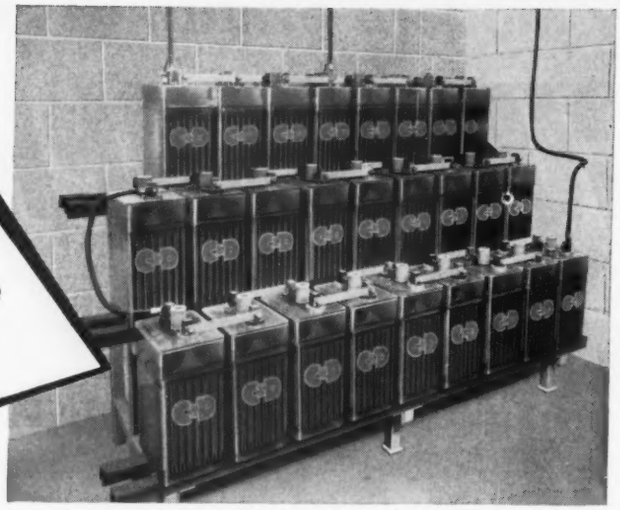
For complete information on the various models available write to—

CALCULAGRAPH COMPANY

HARRISON • NEW JERSEY

THE STANDARD OF ACCURACY SINCE 1892

At The Lorain Telephone Company



Telephone battery installation at The Lorain Ohio Telephone Company, Sheffield Lake Exchange. The 26 Plasti-Cal (lead-calcium) Cells have a 420 A. H. capacity.

It's C&D Batteries for EXTRA life

Continuous, dependable service starts in the battery room—with C&D Batteries. For Lorain, now serving more than 30,000 subscribers in the heart of Ohio's industrial lake district, has found C&D a reliable source for their battery needs.

When you order your next telephone battery, choose C&D. For with C&D batteries you get:

1. One-piece, permanently-sealed plastic case. Entire unit is shock-resistant and lighter and more compact than glass or rubber.
2. Elimination of sudden leaks due to internal stresses.
3. Easier maintenance, because patented Post Seal eliminates acid creepage.
4. Lower shipping costs. Light plastic case reduces total in-place cost.

For C&D batteries consult your Equipment Supplier. For details and specifications write for Bulletins T-527 and T-528.

C&D

BATTERIES, INC.

of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

of particular importance in view of the inflationary effects of recent years, will be brought before Congress again in the future.

New REA Booklet

FOR THE first time since the start of the rural telephone loan program, the Rural Electrification Administration has wrapped into a single package complete information on obtaining telephone loans.

A new booklet, "Pre-loan Procedure for Rural Telephone Companies," (REA bulletin 320-4), has just been published and is now available upon request. A companion piece, "Pre-loan Procedure for Rural Telephone Cooperatives," (REA bulletin 320-1), is designed for cooperative-type applicants, and is also available.

Contents include a brief resume of the program which REA operates, instructions on how to make an application for a loan, and detailed information about the requirements which must be met by borrowers.

Coming Conventions

Michigan Independent Telephone Association, Hotel Pantlind, Grand Rapids, Sept. 9, 10.

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 16, 17.

Tennessee Telephone Association, Hermitage Hotel, Nashville, Sept. 16-17.

Arkansas Telephone Association, Majestic Hotel, Hot Springs, Sept. 20, 21.

United States Independent Telephone Association (National Convention), Conrad Hilton Hotel, Chicago, Oct. 11, 12, 13.

North Carolina Telephone Association, Carolina Hotel, Pinehurst, Oct. 18, 19.

South Carolina Telephone Association, Myrtle Beach, S. C., (Hotel to be named later), Oct. 25, 26.

Virginia-West Virginia Telephone Association, Roanoke Hotel, Roanoke Oct. 28, 29.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, Nov. 4, 5.

Alabama-Mississippi Telephone Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 8, 9.

South Dakota Telephone Association, Sioux Falls, Nov. 11, 12.

Georgia Telephone Association, Bon Air Hotel, Augusta, Nov. 12, 13.

Florida Telephone Association, Soreno Hotel, St. Petersburg, Nov. 15, 16.

This little wife went to market . . .

this little wife had to stay home!

The "office at home" is becoming more and more popular with real estate agents, insurance men, salesmen, service men and a host of other small business men. But how popular is it with the little woman who has to baby-sit with the phone every time her husband is out?

"Stuck with this phone again," she fumes, "when I should go to market!" AND SHE CAN GO TO MARKET — ANY TIME — if you will just let her know about Peatrophone — the mechanical secretary that answers the phone with a *personal* talk-out message, and records incoming calls accurately and permanently.

Here is a large, ready-made market for Peatrophone rentals . . . all the Sallys and Sarahs and Susans who are tired of being business-phone stay-at-homes.

Never underestimate the buying power of a woman *when you have a product that will make life easier for her — at a cost of pennies a day!* And never underestimate the great new source of revenue to be derived from Peatrophone rentals.

Note: Selective harmonic ringing subsets now available — — all frequencies. Write for further information.

TELEPHONE ANSWERING & RECORDING CORP.
342 Madison Ave. New York 17, N. Y.

CUT CIRCUIT OUTAGES *with*

UNMATCHED PERFORMANCE

Performance is equal in all channels. Increased terminal loop gain of 2nd and 3rd channels make channel amplifiers unnecessary. Transmitting levels and receiving gains are adjusted in each terminal by variable attenuation pads equipped with calibrated dials. The receiving gain is selected by a variable attenuation pad calibrated in twenty 1 db steps.

UNIVERSAL SIGNALLING

Simple strapping changes on the terminal strips adapt Kellogg Transmitted Carrier Systems for either dial or ringdown signalling. When connected for dial service, the signal unit is arranged to connect to a composite type trunk with T, R, A, B, E and M leads. The frequency shift principle is employed in both ringdown and dial service.

NO SYNCHRONIZATION

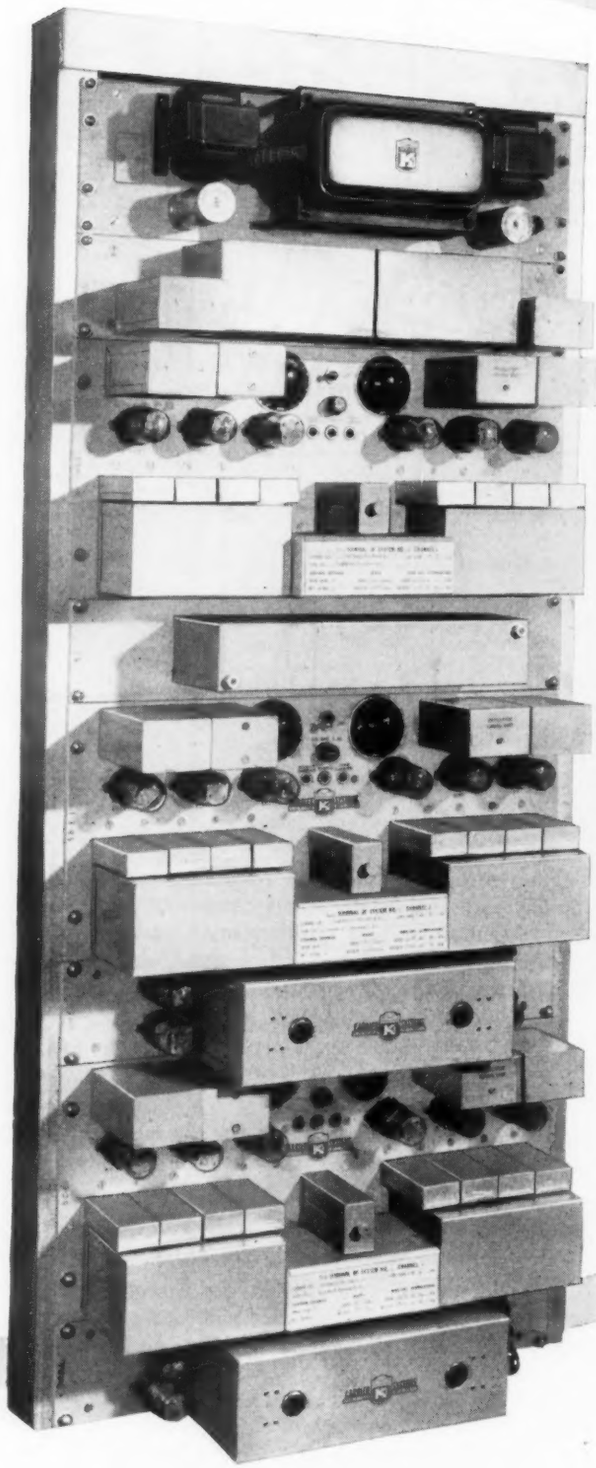
Separate oscillators are not required in the receiving end of the carrier terminal — each sideband is demodulated by the same carrier frequency which produced it originally. With Kellogg you have no need for synchronizing or aligning oscillator frequency.

NO FREQUENCY DISTORTION

Kellogg Transmitted Carrier Systems are totally free of voice distortion caused by frequency shift. Speech is always clear and distinct. Voice frequencies are never shifted by a variation in oscillator frequencies.

NO CARRIER LEAK ADJUSTMENT

There's never a carrier leak problem with Kellogg Carrier. Adjustments for eliminating or minimizing carrier leak are never required.



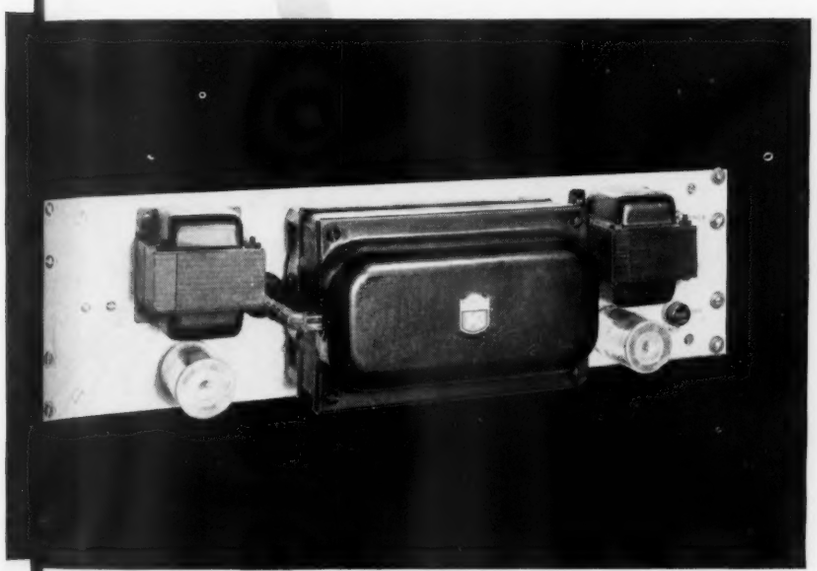
Superiority proved by use . . .

KELLOGG Transmitted Carrier Systems have set a new standard for reliable performance. Outstanding design and workmanship give the superior operating advantages.

th KELLOGG *Carrier*

Enjoy Continuous Service...
Reduce Maintenance Cost...Save Money!

You're bound to save with Kellogg *Carrier!* Letters from customers prove it! . . . and these unsolicited testimonials always show how much well-satisfied users appreciate the minimum maintenance and consistent service of Kellogg Transmitted Carrier Systems. Kellogg systems win enthusiastic acclaim in exchange operation because they're built by *telephone men*—men who completely understand your problems. That's why a Kellogg carrier circuit can be installed promptly — without time-wasting adjustments—to deliver continuous, trouble-free service.



SELF-REGULATED POWER SUPPLY UNIT . . .

. . . *Only* KELLOGG *Has It!*

Kellogg's extra heavy duty 106 power supply unit provides more than adequate power for three channels of Kellogg Type 5 Carrier equipped with any signal unit. In addition, it is self-regulating! Variations in line voltage from 95 to 125 volts result in a change in voltages delivered to the carrier equipment of less than 3%, thus eliminating disconnects and false signalling when line voltages are abnormally low, and protecting electron tubes and other components against damage on burn out when line voltages are abnormally high. The unit uses a selenium rectifier instead of an electron tube, thereby practically eliminating all maintenance. With the 106 power supply, the cost of a three-channel system in dial service is reduced and a saving of 8¾ inches of rack space is effected. NOTE: The 106 power supply unit may be purchased for use with existing Kellogg terminals or to power other electronic equipment.

Write Today for Your Free Copies

Yours for the asking—"Kellogg No. 5 Transmitted Carrier Telephone Carrier Systems" booklet and engineering manual on "Transmission Measurements of Telephone Circuits." Get the facts and you'll get Kellogg!

KELLOGG DIVISION OF IT&T **KELLOGG SWITCHBOARD AND SUPPLY COMPANY**

A Division of International Telephone and Telegraph Corporation

SALES OFFICE: 79 WEST MONROE STREET, CHICAGO 3, ILLINOIS

Warehouses: Chicago 38 • Kansas City 1 • Mansfield, Ohio • St. Paul 4 • Dallas 2 • San Francisco 3

Branch Offices: New York 7 • Portland 5 • Los Angeles 13

Export: International Standard Electric Corporation, New York 7, N. Y., U. S. A.

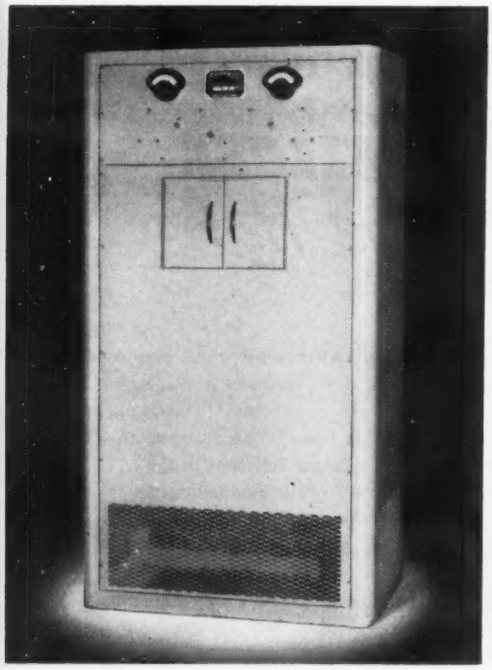
Outstanding Battery Performance is yours when you choose Gould Plante' Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., —they're the finest money can buy.

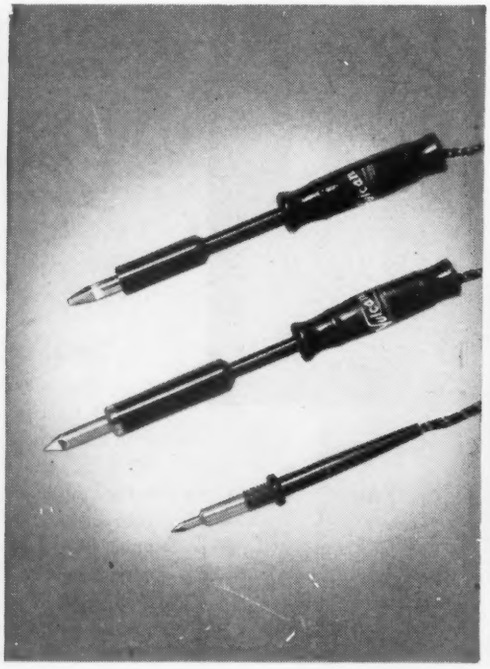
Disc Records have proved most practical medium for recording messages on telephone answering instruments. Peatrophone "the mechanical secretary" records talk-out and incoming messages permanently for re-use or reference. Discs may be kept in letter file.

Cable Lashing Wire for use with modern Cable Spinners, Crapo Galvanized ("C" Coated) Lashing Wire available in .091″ and .061″ diameters. Wire also available in .045″ and .065″ diameters. Made by the INDIANA STEEL & WIRE CO.

Automatic Constant Voltage Battery Charger! By adding the proper 3-phase FLOTROL to your exchange you can maintain full-floating operation, cut down running time on your rotary equipment and save on your power bill. LORAIN PRODUCTS CORP.

You'll Find Soldering is Easy... workmanship neater with famous Vulcan Soldering Irons. Available in five sizes—either plug or screw tip. The high-powered heating element assures even proper heat and long service. VULCAN ELECTRIC COMPANY.





KELLOGG

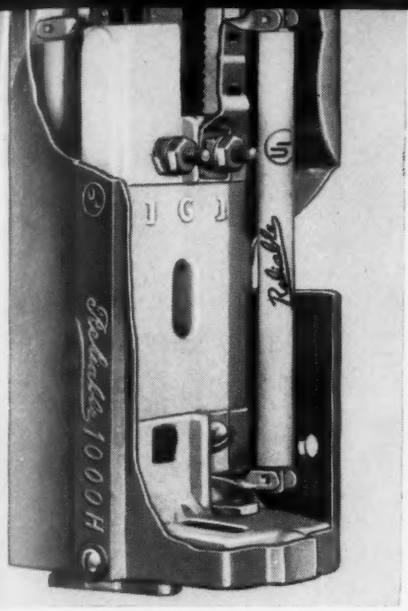
DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

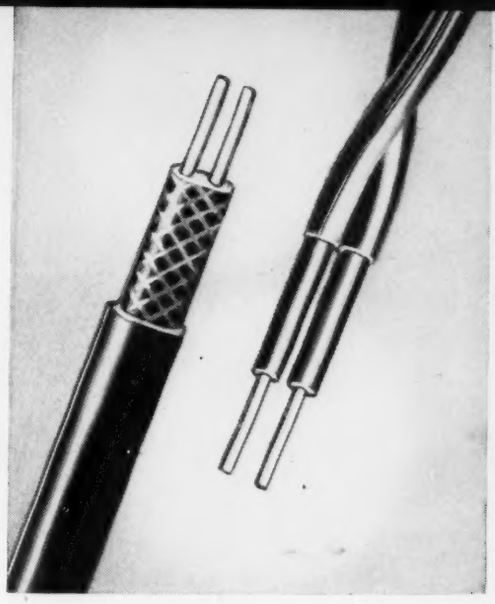
Sales Offices: 79 W. Monroe St., Chicago 3, Ill.

A Division of International Telephone and Telegraph Corporation

Send Your Next Order for Supplies To:



Use "1000-H" Outdoor Protector with Self-Cleaning Sawtooth Discharge Blocks. Made by RELIABLE ELECTRIC CO., with phosphor bronze clips; aluminum mounting bracket. Low-absorption porcelain base prevents danger of shorting with fuse clips.

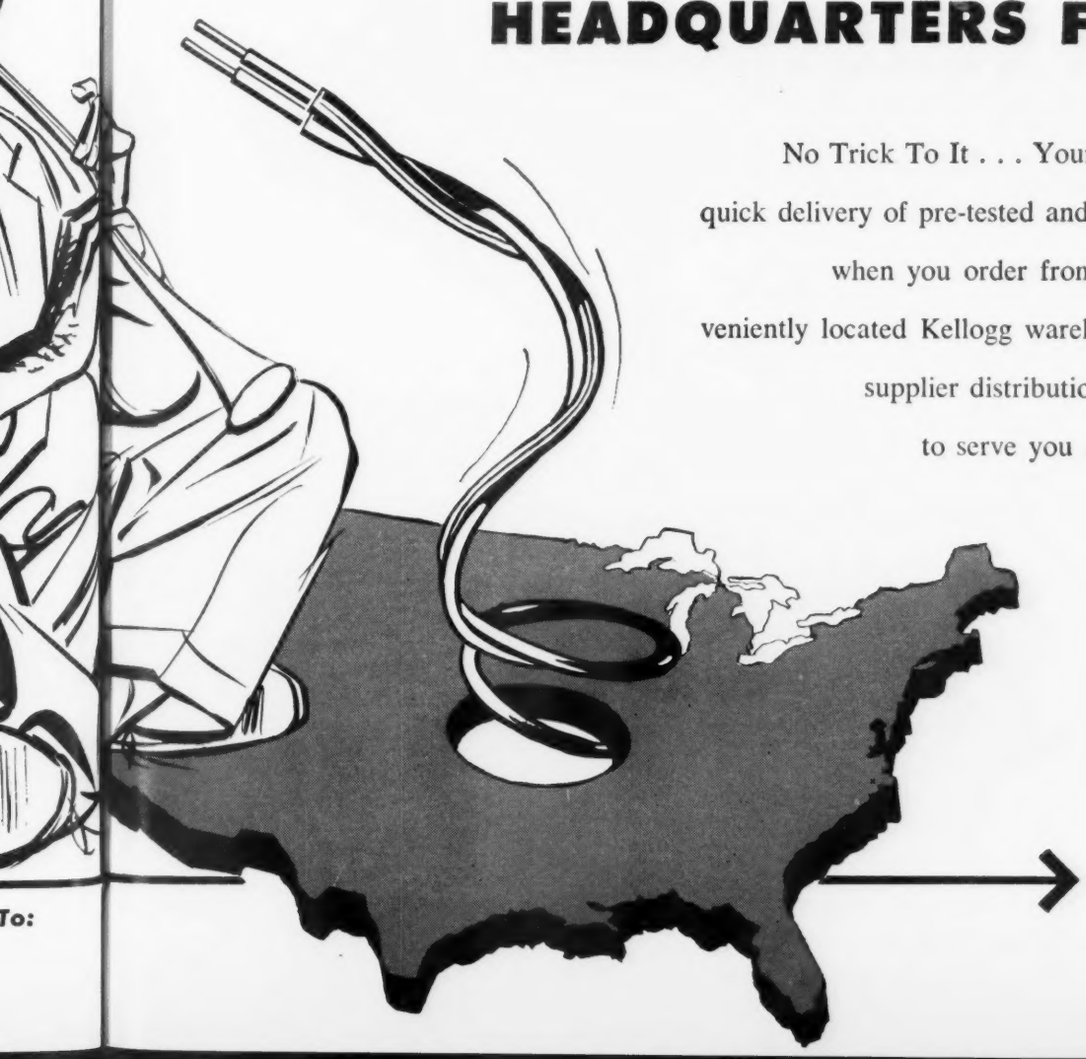


Lasts 30% Longer! Long service life and low plant costs go hand-in-hand with the installation of ENDURPRENE—The Neoprene Drop Wire available in Copperweld and Bronze. Flexible, easy to handle. GENERAL INSULATED WIRE WORKS, INC.

Reliable-Economical! "Eveready" "Columbia" "Gray Label" telephone dry cells give you dependability, plus economy thru higher sustained voltage and extra service life. NATIONAL CARBON COMPANY, A Division of Union Carbide and Carbon Corp.

KELLOGG

HEADQUARTERS FOR SUPPLIES



No Trick To It . . . Your order gets instant action . . . brings quick delivery of pre-tested and guaranteed Line Supplies when you order from Kellogg. Six well-stocked, conveniently located Kellogg warehouses and more than 100 supplier distribution depots are ready to serve you . . . today.

KELLOGG BRANCH WAREHOUSES AND OFFICES:

6000 W. 51st Street
Chicago 38, Illinois
REliance 5-5445

1515 Turtle Creek Blvd.
Dallas 2, Texas
Prospect 6207

4501 Truman Road
Kansas City 1, Missouri
HUmboldt 7085

1663 Mission Street
San Francisco 3, California
Market 1-6011

410 N. Syndicate Avenue
"Midway Area"
St. Paul, Minnesota
Nestor 5878

1555 West Fourth Street
Mansfield, Ohio
Mansfield 7146-6

KELLOGG BRANCH OFFICES:

406 S. Main Street
Los Angeles 13, California
Vandyke 6759

720 S. Washington Street
Portland 5, Oregon
Atwater 8559

157 Chambers Street
New York 7, New York
BEekman 3-8505

Do You Need the Professional Touch?

Sure, you can get along with a "home-cooked" telephone directory. But are you taking full advantage of the potentialities of your operating area in advertising revenues? Is your directory an asset or a liability in public relations? Are you satisfied with your showing in "multiple listings?" If the answer is "no" to any of these questions, call Loomis for the professional touch.

KNOW-HOW TO SOLVE YOUR DIRECTORY PROBLEMS

"Where to Call"

• 666 cities and towns in 20 states are served by the 234 directories that retain Loomis services.

LOOMIS
ADVERTISING COMPANY

FT. WAYNE, IND.
229 E. Berry St.... EAstbrook 3477

ST. LOUIS, MO.
506 Olive... GArfield 3700

OMAHA, NEBR.
Omaha Nat'l Bank Bldg.... ATlantic 0188

KANSAS CITY, MO.
810 Baltimore... HArrison 1270

PHILADELPHIA, PA.
1201 Chestnut... Rittenhouse 6-4440

BALTIMORE, MD.
1229 North Charles... Vernon 7-0642

Cheap Money Is NOT ALWAYS CHEAP

IT is generally considered good business for the management of a business to obtain capital for it, prior to its equity capital, as cheaply as possible.

No doubt that is good business in most cases for industrial concerns or for any type of business that can expand or not, as it may choose. But we think there may be some questions as to the long-time benefit to a telephone company of cheap money.

Of course when new capital is raised by the sale of long-term debt obligations, such as bonds or debentures, and especially when such securities are sold to institutional buyers, then even telephone companies may be justified in most cases in obtaining money as cheaply as they can. But there is always the possibility that such debt obligations, if sold to the public on a low interest basis, may go below par if interest rates rise, and thus impede further financing.

But even if that were not so, telephone companies cannot finance by debt obligations alone. With the business continuously expanding and constantly requiring more capital, they usually must, at some stage, sell more common stock or sell preferred or preference stocks, not only to obtain more capital, but also to margin the sale of more debt obligations.

Nor can the telephone company say, as can industrial companies: "Thus far we will expand, and no further. The telephone company must meet the growth requirements of its operating territory. That, for a number of years past has necessitated almost continuous financing by rapidly-growing companies.

A considerable amount of Independent telephone company financing has been done, during recent years, with preferred stock. A number of such issues were sold at comparatively low dividend rates. There are cases where such low-dividend stocks are now quoted — as dividends on other stocks have increased — at less than their issue price. This, obviously, makes additional financing more difficult.

"When we did our most recent preferred stock financing last year," a telephone company manager told us, "we could probably have obtained an underwriting on a 5% stock. But we chose to issue a 6% stock, which was heavily over-subscribed."

"The stock was sold within our state; most of it locally. The buyers, averaging about $500 each, have apparently put the stock away in their safe deposit box for keeps, since very little of it changes hands. And an important thing to us is that we are practically certain that our present preferred holders would take up most, if not all, of another issue of the size any time we offer it."

"Further," he added, "our 6% stock never changes hands at less than par."

This is the kind of situation we mean when we say that cheap money is not always cheap.

That telephone growth will continue in this country, probably no one would dispute. That such growth will necessitate a constant and large flow of new money into the telephone business is obvious.

It is far more important to the public it seems to us, that financing of such growth be kept possible, than that it be done as cheaply as possible.

In the telephone business, cheap money is not always cheap!

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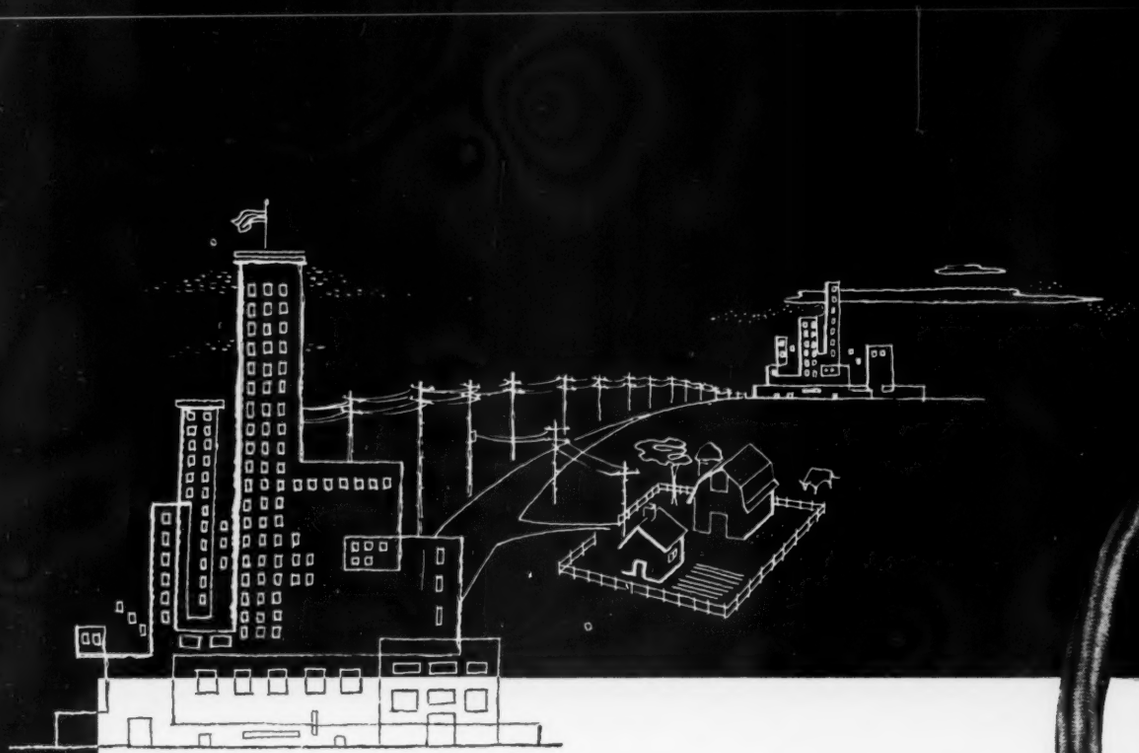
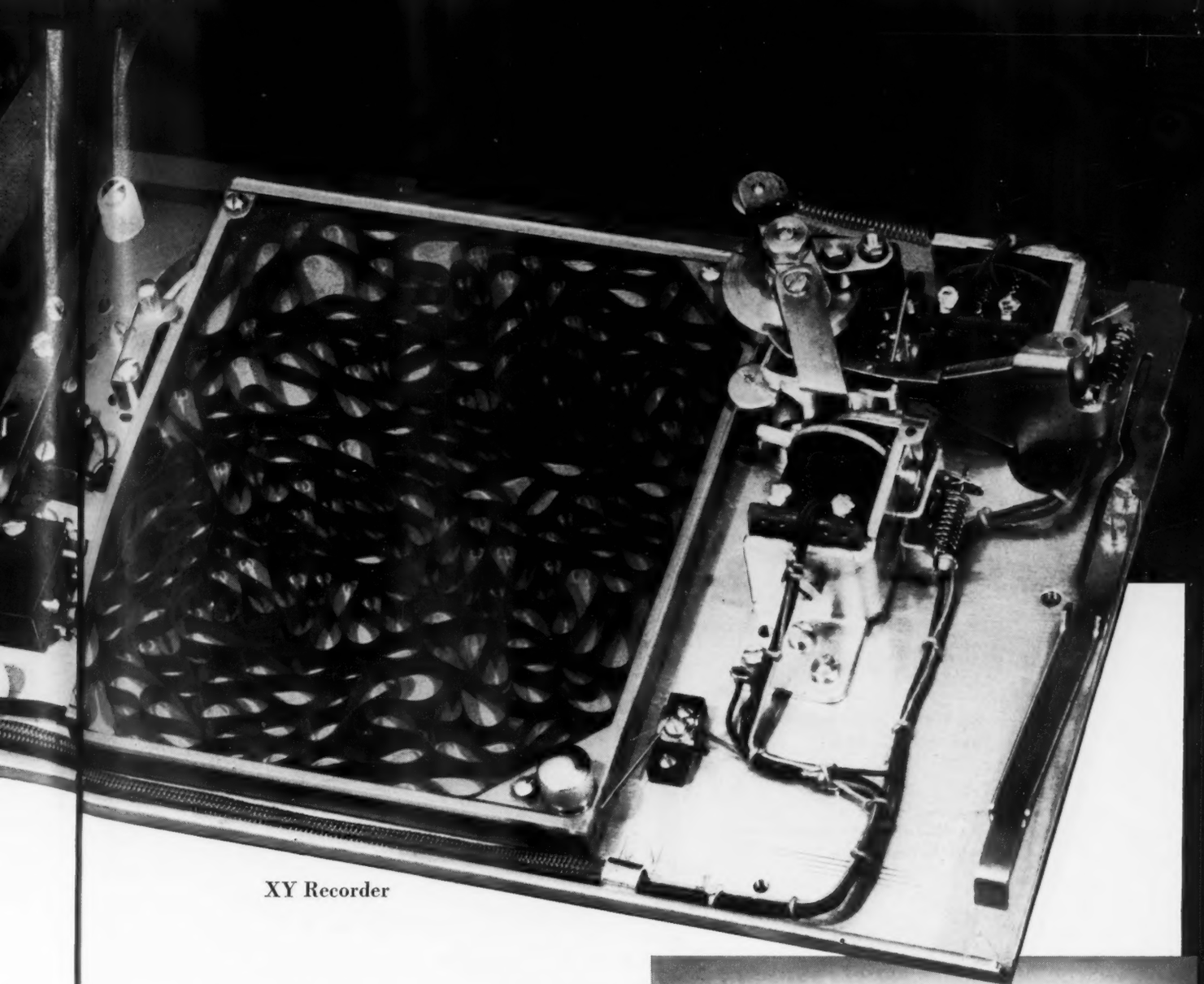


Are you happy with your profits (or losses) on short-haul tolls?

If expensive recording and billing expenses are reducing the *gross* income from your short-haul tolls to zero—or to a loss, you need the Stromberg-Carlson XY* Toll Ticketing system.

Here is Electronics at its time-saving, money-making best! From the moment a subscriber reaches a trunk to a toll point to the moment conversation is completed and the receiver replaced, the XY Toll Ticketing system answers, monitors, verifies, records and computes the data. It even prints it on a uniform ticket from which billing is made.

- **XY Toll Ticketing is unattended—the first *person* concerned is whoever gathers up the printed tickets each morning.**
- **XY Toll Ticketing's recorder has a storage capacity of 100 calls per trunk—and will automatically clear itself when near-capacity is reached or a pre-determined playback time comes around.**
- **XY Toll Ticketing will work with *any* system in which connections are made in direct response to the subscriber's dialing operation.**
- **XY Toll Ticketing includes control circuits by which trunks in remote offices can be "read" and their stored information played back to one central ticketing source.**
- **XY Toll Ticketing's magnetic tape, electronic tubes and mechanical components are built to *last* far beyond even high standards of performance.**

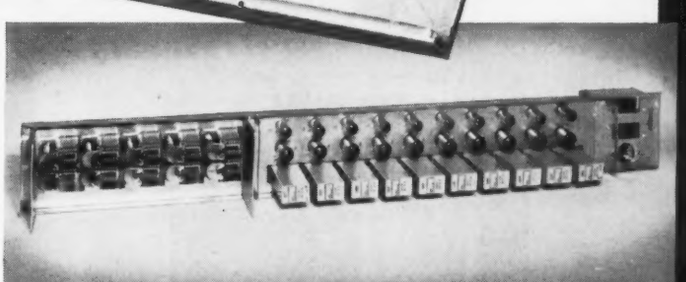


XY Recorder

- **XY Toll Ticketing is one of the soundest investments you'll ever make—since, with it, A-B toll operation ceases to be a headache and becomes profitable.**

These are the main components of the XY Toll Ticketing system:

- **XY Recorder—with endless magnetic tape and automatic playback.**
- **XY Identifier Circuit, to identify thousands, hundreds, tens, and units digits of the calling party's number.**
- **Printing and Cutting Unit—basket holds up to 2500 tickets.**



Identifier Circuit

Printing-Cutting Unit

Stromberg-Carlson®

FACTORY, GENERAL OFFICES: ROCHESTER 3, NEW YORK

Atlanta 3, Ga., Chicago 6, Ill., Kansas City 8, Mo., San Francisco 3, Calif. SETCO Division, Dallas, Texas

*Reg. U. S. Pat. Off.

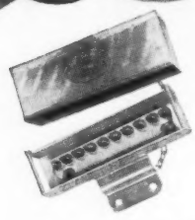
WHEN IT COMES TO TERMINAL SPECIALTIES—

— play it safe and Standardize on the line that has been field designed to offer a "plus value" in efficiency and service life.

Every item in the Reliable Line of Terminal Specialties is based on extreme simplicity of design and produced to the highest standards of workmanship. Materials are tested and proved to more than satisfy the needs in the field. By incorporating these standards in your operations you are really building for the future. — Specify Reliable Terminal Specialties for added plant efficiency.

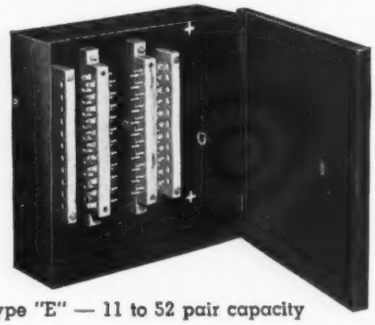
RELIABLE WIRE TERMINALS

No. 5502 — 2-post terminal for drop wire to bridle wire.



No. 5503 — 10-post terminal for drop wire to bridle wire.

RELIABLE TERMINAL BOXES



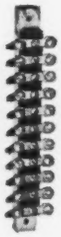
Type "E" — 11 to 52 pair capacity

Type "EC" — 26 and 52 pair capacity with jumper rings and space for jumper wires

Type "L" — 5½ to 26 pair capacity

RELIABLE TERMINAL STRIPS

TYPE "E"
Screw posts with soldering terminals — hard maple. 9-5/16" to 37¾" lengths.



TYPE "L"
Twin Screw Posts — One soldering terminal on molded plastic — Maple base.

TYPE "T"
Soldering Terminals in molded plastic, 1, 2, 3, 4, 5 and 6 rows, of 20 or 26 terminals per row.

RELIABLE FUSES FOR PROTECTORS AND TERMINALS

CERAMIC
Nos. 27L, 35L, 77L, 95L and 31L.
Tip 13/64" diameter.

CERAMIC
Nos. 53L and 55L.
7/16" round, fibre with 3/8" hex. nuts both ends.

FIBRE
No. 56.
7/16" round, fibre with 7/16" hex. nut one end—8-32 threaded tip.

FIBRE
Nos. 80 and 81.
3/8" round, fibre telegraph fuse (two lengths).

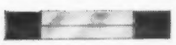
FIBRE
No. 52.
7/16" round, fibre with flat tips.

WOOD
No. 44.
Flat wood fuse (wire lies in open slot)

HEAT COIL FUSES
Nos. 107 and 115H for 303 and 308 Protectors.

HEAT COIL FUSES
No. 52B.
For Telephone Protector.

RELIABLE MICA FUSES



WESTERN UNION TYPE
Nos. 19, 8, 22, 235 and 310.
(Specify code and amperage)

POSTAL TYPE
Nos. 137, 21, 11 and 25.
(Specify code and amperage)

RELIABLE MICA FUSE BLOCKS

WESTERN UNION TYPE
No. 18.

POSTAL TYPE
No. 20.

RELIABLE BLOW-RITE FUSE WIRE

A copper alloy wire especially made for telephone fuses.

SPECIFY RELIABLE
AND BUILD FOR THE FUTURE

RELIABLE ELECTRIC CO.
3145 Carroll Avenue
Chicago 12, Illinois

Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS' SERVICE TO THE UTILITIES

TOLL IS DUE FOR PROMOTION....

By C. D. INGEBRAND*

***LONG DISTANCE** promotion done by any one company will eventually accrue to the benefit of all members of the telephone industry. Here are some practical tips on selling your subscribers on the idea of using long distance.*

WITH THE tremendous advances made by the various manufacturers in the development of newer, faster, and more economical ways of accomplishing the job of providing both local, but primarily long distance facilities, we in the telephone industry find ourselves once again in a completely normal situation where we are in a position to sell. In addition, don't forget that message toll revenues are highly volatile and may be quickly affected by even a mild business recession. It's stimulating, it's 100 per cent American, but it will at the same time come as a complete shock to many people (our subscribers). How many of them know we want to *encourage* rather than *restrict* the use of long distance?

C. D. INGEBRAND
Fort Wayne, Ind.

During the past several years, all we have heard is how to take care of the demand for service in the light of shortages, government restrictions and the actual fact that individuals no longer consider telephone service a luxury but primarily a necessity. Now, we have a wonderful chance to reverse this negative sales approach and all join together as a team to sell our business at every possible opportunity. You will find it is a lot more fun persuading a customer that long distance service fulfills his needs at a minimum cost rather than explaining delays and shortages.

Basically, few companies are large enough to have Special Service or Long Distance Promotion Departments, so it is more important in promoting long distance service in the majority of companies that everyone in the company sells. Therefore, it becomes the responsibility of management to provide, not only the encouragement, but also the know-how which is so necessary if any sale is to be brought to a successful conclusion.

I can't give you any magic formula for increasing long distance business but maybe I can give you a few ideas and plans which are not new, but which may refresh your memory on some of the methods you used in the far distant past when you were selling, not merely explaining shortages and taking orders.

Selection of the Toll Market

THE MARKET for any product or service generally is regarded as consisting of all users and potential buyers. It follows that every telephone customer is, in principle, a prospect for toll promotion work. However, we know it would not be economically feasible or even practical to interview every one of our

Mr. Ingebrand is commercial manager of the Home Telephone & Telegraph Co., Fort Wayne, Ind.

customers, so actually the best tools to use to cover all your customers in a general way are radio, newspaper advertising (TV if it is available), bill inserts, displays, exhibits in railroad stations, trade fairs and home shows, postage meter imprints, directory advertising, business office displays, imprints on bill envelopes and backs of bills, public talks, spot ads, employe publications, and most important of all, your employes themselves indoctrinated with the idea that everyone is on the Sales Team. How easy it is for an employe to say to a friend — "*Why don't you call him on the telephone — it may save an unnecessary trip?*"

In our advertising and promotional material there are many points that can be covered — new low cost of Long Distance service — because of decrease in Federal Excise Tax, speed of service and convenience due to introduction of operator toll dialing and eventual spread of customer toll dialing, saving in time and expense by eliminating costly trips. However, in any discussion or study of Long Distance usage, it is very apparent that the bulk of our Long Distance revenues are being received from our business customers and, therefore, they are the ones who should be the primary target of any stepped-up sales campaign.

In considering business customers, I find that currently in this nation there are some 3,500,000 customers representing all lines of business and ranging in size from the very large corporations with branches throughout the country to the small individual proprietorships whose interests are almost entirely local. Experience indicates, however, that relatively few of these customers have a sufficient requirement for toll service to justify canvassing by a sales force. Consequently, it is necessary to select the particular firms whose present or potential needs for toll appear to warrant a visit by an employe exclusively for the purpose of toll promotion.

Past experience in toll promotion shows that sales work was most productive, generally, with customers already using a sizeable amount of toll service. This is a matter which can only be determined by actual trial and experience and analysis of results in any particular local area.

"Business customers should be the primary target of any stepped-up sales campaign."

During the past few years some companies have made surveys of toll usage of selected business firms. The primary purpose of this survey work, which is a continuing operation, is to identify the recurring day-to-day uses of toll in business operations and to learn the specific advantages that customers obtain from these uses.

Information procured from these surveys can then be analyzed and used in suggesting uses to other similar business users.

Establish an Initial Market

TO PROVIDE a starting point for getting the toll sales job underway, the initial market should be established, using as a base selected customers that appear to be the best prospects for toll sales work.

Although the primary purpose of the initial market is to provide a starting point for toll selling, it also affords a general indication of the size of the job to be done in order that an appraisal can be made of the force required for full scale activities.

The initial market will include customers in all types of industry as well as all functions of business, i.e., manufacturers, retailers, wholesalers, service organizations such as — finance — insurance — transportation and utilities.

Studies of previous toll sales work show that, in general, promotional activities were productive with customers using $20 *or more per month* of toll service. Moreover, it has been found that in using a fixed level of toll billing, market selection is a relatively simple process and can be done readily by clerical people.

The process of selecting an initial market on this basis entails a check of the *billing stubs* on file at Revenue Accounting Departments or Business Offices. A check of stubs for one billing period would seem to be adequate generally.

Firms in the initial market — whatever is the basis of their selection — will not be equal as to their possibilities for productive sales work. Consequently the larger toll users, generally, would be interviewed ahead of smaller users where sales efforts should be more productive. However, to gain experience, you may want to interview some of your smaller users to see what problems arise in your sales approach.

Another method which can be used to select the initial list and which is favored by some companies, is to include the larger toll users whose aggregate toll billing accounts for about 50 per cent of the total business toll revenue.

Most TWX customers, as well as those using intercity private line service, should qualify for the initial toll market because of their toll usage. Whether or not they otherwise qualify, it would seem desirable to include such customers in the market since the use of these services generally indicates a considerable need for intercity communication.

The selection of the initial toll market in most companies probably will be based largely on customers' toll billing rather than on the use of TWX and private line services, with the exception of the larger Independents and the Indiana Bell Telephone Company.

However, there may be other sources of information, e.g., information obtained by service representatives in the local business office which give specific indication of the toll needs of particular customers.

Where such information is conveniently available, it might be reviewed with the thought of adding to the initial market any firms not al-

ready included that appear to have good toll sales possibilities.

After the initial market has been selected, it is necessary to interview the prospective customers and sell them on the advantages and savings which may be effected by additional use of long distance service.

The effectiveness of your sales efforts with these customers depends to a considerable extent on the adequacy of your preparation for interview work and the orderly presentation of the facts.

Let me give you a few hints. A good salesman prepares himself for the interview by learning all he can about his customer's business. This information is obtained by referring to: —

(1) The City Directory.

(2) Newspaper feature articles, advertisements, etc., which relate to your prospect.

(3) Billing Data for the company which should include toll, TWX and private line.

(4) Officials' names. If not otherwise available, call PBX operator.

(5) And making notes on principal functions of business which are seven in number — Accounting, administration, engineering, production, purchasing, sales and traffic.

In other words learn about the customer's needs and problems and then suggest ways to meet them.

Let me give you some specific examples of plans which may be sold to your customers. Since the sales department in practically all businesses is your biggest user of long distance service, let's see what plans have been used successfully in this field.

(1) To intensify market coverage we have what is called a *Key-Town Plan*. This is a systematic method of contacting more people at less expense by substituting telephone calls for certain personal visits. Select a central or Key-Town on the salesman's itinerary, from which he can telephone customers or prospects in the surrounding territory.

This results in more market coverage at less cost. The right combination of personal and telephone visits means new markets can be opened at less cost and present markets can be covered more intensively. Combining telephone visits with personal calls can reduce travelling, yet the salesman's contacts still get direct personal attention.

On-the-spot personal visits can be made when telephone calls ahead indicate the need. *Sell by telephone* when prospect needs quick attention.

Salesmen can solicit business with greater convenience, comfort and rapidity. It permits adjustment of complaints, builds goodwill and avoids wasteful lobby-sitting.

(2) To increase market coverage use the *Skip-Stop Plan*. This is a systematic *Trip-Saving* method of contacting more people at less expense by substituting telephone calls for certain personal visits.

When covering his territory, the salesman visits some of his customers on one trip and telephones the others in nearby towns. On his next trip the process is reversed. This saves dollars as high travelling expenses are reduced. Fruitless sales trips are eliminated without loss of good will, and less expensive telephone visits retain the persuasive personal touch.

It also means: (1) *better time and market coverage;* (2) more personal time for building new accounts; (3) low-cost coverage of "now-and-then" buyers; (4) quick coverage during busy seasons; (5) fast coverage when new prices or products are announced; (6) no time wasted visiting customers "not in the market"; (7) the salesman is *there* more often when orders are being placed; (8) live prospects are ascertained in advance by telephone; (9) necessary personal calls are easily arranged; and (10) the salesman has the opportunity to *sell by telephone* when prospect needs quick attention.

(3) To save vital time use *Sequence Calling Service*. This is a prearranged plan whereby several long distance calls are filed simultaneously and completed individually in order without loss of time between calls. The subscriber tells Long Distance the calls he wants to make and the operator will have a new connection ready as each call is completed.

(4) Broaden selling area with *Special Reverse Charge Telephone Service*.

With this service, a company is assigned a special telephone number, such as ENTERPRISE 2-1234, which is listed in the Alphabetical and Classified Directories of the cities selected.

By calling this number, customers in the out-of-town points are connected directly with the company which is a subscriber to Enterprise Service. Charges for these calls are automatically reversed at station-to-station rates.

This builds business by giving a company the advantage of a branch office in each selected town — at a fraction of the cost! Also it gives a company service comparable to that of more favorably located competitors, and as a result their customers get *quick action, convenience* and *economy*.

(5) Promote the use of *Telephone Credit Cards*.

This special arrangement permits long distance calls to be made on *Credit* when the subscriber is travelling away from his office. The subscriber calls Long Distance as usual and gives her certain information printed on the face of his *Telephone Credit Card*. Charges are billed to the home office.

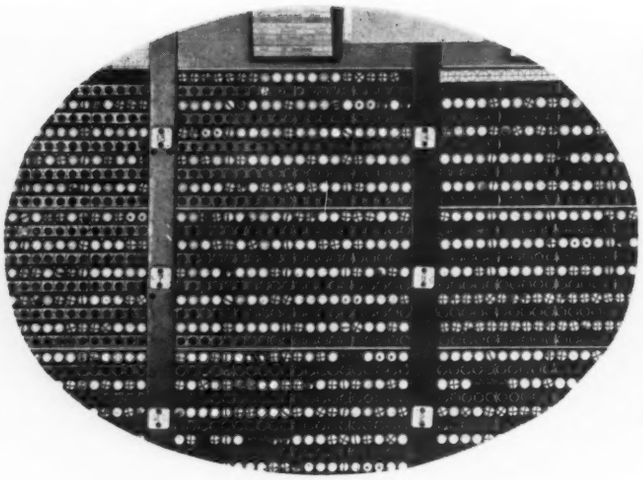
By using toll credit cards it is easy to control and verify sales expense. Monthly itemized bills provide a check of actual telephone activity and an accurate record of the cost. Profitable telephone visits are analyzed by matching long distance calls with sales results.

These are just a few of the many plans that you can work out for your individual customers. I know you will find Long Distance Promotion both interesting and profitable. Just consider for one moment all the functions of business that can be more economically and efficiently handled by the use of Long Distance.

Sell your customers on the idea of using Long Distance to — (1) collect delinquent accounts; (2) handle personnel matters with branch offices; (3) procure supplies to meet demand; (4) announce price changes; (5) trace shipments delayed enroute; and many, many more, far too numerous to mention.

In closing, let me state that long distance promotion done by any one company will eventually accrue to the benefit of all of us in the telephone industry, and this basic fact must be foremost in all our minds if we are to successfully meet today's competition as evidenced by the tremendous selling program now in force by Western Union, whose slogan "TNT" is "Telegram-not-talk." Of course, spelled backwards "TNT" means "Talk-not-Telegram."

***THIS ARTICLE** presents a "potpourri" of traffic practices including new versions of old ideas and a medley of modern ideas.*



Part One—

POTPOURRI

By RUTH E. RICHARDS*

***THE REVISED** methods described in this article are the work of experts who are constantly seeking to improve service to customers by replacing outmoded practices.*

IT'S AN old-fashioned word — *potpourri* — to the not-so-young it calls up memories of mingled fragrances, of rose leaves and lavender, of spices and oils blended together in a rose jar in the parlor. The lifted lid allowed a medley of aromas to perfume the air, a magic mixture of many things.

Not so magic, but certainly a mixture will be our potpourri of practices, new versions of old ideas, a medley of operating ways to keep you up-to-date.

One of the "new versions" is contained in revised phraseology in giving a desired telephone number to a calling party when the called number was not supplied. During the past two or three years the major telephone companies have made a concerted effort to induce customers to supply the telephone number when placing a long distance call.

To effect the desired result, operators have been instructed to give the number to the calling party when it was secured. Some undesirable reaction has been experienced when the phrase used was more commanding than suggestive. To overcome this objection it is proposed that when the called number was not supplied by the calling party, at the first opportunity after obtaining it, say for example, "you may wish to make a note of the number, it is (*No.*)" or "(address, name)'s number is (*No.*) if you care to make a note of it."

If the calling party is on the line when you secure the number from another operator ask, "did you get the number?", if it seems appropriate or repeat it to him before a report.

WH — "we have." Yes, we have a revised WH practice which appears to be the best method yet provided for handling "ready" reports on calls from other places. It relieves the operator at the called place of much of the detail of writing a report ticket and she is no longer required to "clip" the connection, but supervises and disconnects in the regular way for an inward connection. This WH practice which was issued to be effective in March, 1954, and which has the enthusiastic endorsement of operators whom I have contacted, is not being used by some offices (actual work at the switchboard proved this to me.)

Request For Distant Operator By Number

IF A CUSTOMER asks for a distant operator by number, or indicates that he is ready to talk on an inward call, say, "will you hold the line please?" and establish connection with the distant place operator, who will secure all details of the call from the called party. However, if you do not have direct access to the customer's line from the toll board, secure the customer's number, if not volunteered, and secure the line on a switching trunk before passing the ready report. If the customer volunteers calling and called details of the call say, "will you give that information to the (calling place) operator please?"

Reaching Distant Place Operator

PROCEED IN the regular way for an outward call, except that you use the toll cord of the idle pair

**Miss Richards is method's supervisor of the General Telephone Co. of Ill., Springfield. Her Traffic Department articles appear in each issue.*

farthest from the timing device. If you encounter delay in reaching the distant office, give the "NC" report, and secure the customer's number before releasing him.

Write a report ticket if in your judgment it will be needed, entering only such details as are necessary to advance the call, such as routine directions; the name of the ATC and the TX operator number; the customer's number when released due to NC. Scratch the ticket when it has served its purpose.

Announcing Call to Distant Operator

SAY "(CALLED PLACE) WH on line" and when the distant place operator speaks to and receives an answer from the customer, cut out. Understand that the distant place operator is responsible for completing the call and giving any reports to the called telephone. You are responsible for giving clearance directions to the OTC, adding the directions to the report, saying "ringing clearance required" or "verbal clearance required," as the case may be.

If the called place is a tributary of your office, pass your toll center name following the called place, as for example, "(called place) TC (name of TTC) WH on line."

EDITOR'S NOTE: *In giving this operating routine to you, I have substituted the term "Distant Place Operator" for the Toll Operating Practice term "OTC." I recognize that they are not truly synonymous, but for the benefit of Independent operating companies who route to and deal directly with other Independent offices, both Toll Centers and tributaries, it seems desirable. If you follow T.O.P. routines fully you will know that a report concerning a distant tributary call is always passed to the toll center of that tributary.*

A revised practice which applies to the calling office and which is related to WH service, provides that whenever word has been left on a call, the OTC operator will check to determine that the calling party is available before making a voluntary attempt to complete the call.

In line with the faster speed of toll service provided by operator toll dialing at more and more centers throughout the United States, added emphasis is being placed upon efforts to complete calls on the initial attempt.

Many of the new practices are based upon this approach to service. While some of the newer practices will result in a greater number of tickets being written, messages and revenue are not affected and the saving in operating time and costs more than compensates for the tickets. Revised instructions for handling AG Requests is such a practice. (Those of you who are interested in coefficients as a measure of operating work time will recognize that subsequent attempts on calls are costly additives to weighted coefficients.)

AG Requests

AFTER ANSWERING a recording signal, if the customer refers to a previous call without mentioning an operating number and indicates that he wishes it tried again, the operator offers to try the call at once if he will give the call details again. Record the details on an Out ticket, print "AG" in the Spec. Inst. space and "ag" in the upper right corner and proceed with the call. At the end of the conversation or after you have made an attempt, send the ticket to the TX.

AFTER GIVING A REPORT OF DELAY: WILL CALL LATER

If the customer says he will call again later, or that he will call from another telephone say, for example, "All right, sir, please call again when you are ready." Enter "cust. will ag" on the back of the ticket and cancel it.

HOLD FOR AG:

If the customer requests you to hold the call until he asks you to try it, say, for example, "I'll be glad to hold it, or it may be more convenient for you to place your call again when you are ready."

If he still wishes you to hold the call, say "Please call Long Distance Operator (TX No.) when you wish the call tried." Enter "hold for ag" (date if specified) on the back of the ticket. If a future date has been specified, also enter "AG (date)" encircled in the Spec. Inst. space.

WORK AT TX POSITION

A ticket is received with "ag" in upper right corner. Locate the original and if there has been no conversation, transfer the reports to the original, scratch the AG ticket and proceed as required.

If there has been conversation, cross out "ag" in the upper right corner of the completed ticket and file it. Then enter "cov. by ag" on the back of the original ticket and scratch it.

The Power of Suggestion

WE HUMANS ARE queer creatures sometimes in our reactions to suggestions; we buy items which we do not actually need because a clever merchandiser thought of putting his entire stock of goods out where it could be seen and the desire to buy was created thereby. We react almost equally well to spoken suggestions to indulge and in some instances to implied restraints. With this thought in mind there has been a revision in phrases used to quote rates, to secure deposits at coin stations and for notifying at the end of the initial period on both coin and non-coin calls to avoid any suggestion that conversation is not expected to exceed the initial period.

Use of the word "overtime" is avoided in coin collecting because of the possible implication of talking too long in the mind of the customer, and provision is made for asking the customer if he wishes to place a call in all cases after quoting a rate, to indicate a willingness and desire to receive his call.

It is no longer necessary to advise the customer that calls are subject to the person-to-person rate when placed to an extension or department without specifying a person. This is to avoid giving any impression that the charge may be too high for the service requested.

NOTIFICATION AT END OF INITIAL PERIOD — COIN TELEPHONE.

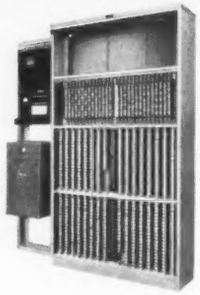
PHRASE: Old — *"Your three minutes are up. Signal when through, please."*
New: *"It is now three minutes. Signal when through, please."*

WHEN CONVERSATION CONTINUES BEYOND THE INITIAL PERIOD.

PHRASE: Old—*"There is a charge for overtime. One moment, please."*
New: *"There is an additional charge" and if you have not finished computing it, add "One moment, please."*

PHRASES: SECURING DEPOSIT AT A COIN TELEPHONE

To secure a deposit for an initial

An idea...  that is still growing!

19 48 | 19 49 | 19 50 | 19

LEICH DIAL SWITCHBOARDS ARE INSTALLED OR ARE BEING BUILT FOR THE FOLLOWING EXCHANGES:

ALABAMA
Goshen
Lapine
Pine Level
Ramer
Thorsby

ARIZONA
Chinle
Ganado
Keams Canyon
Tuba City

ARKANSAS
Lake City

COLORADO
Blanca

FLORIDA
Crawfordville
Greenville

GEORGIA
Broxton
Coolidge

IDAHO
Potlatch
Priest River
St. Maries

ILLINOIS
Argenta
Armington
Atlanta
Ava
Biggsville
Brimfield
Brookville
Buckley
Buda
Cabery
Camp Grove
Campus
Carrier Mills
Castleton
Cedarville
Chadwick
Chatham
Cherry Valley
Cisco
Clay City
Coleta
Compton
Coulterville
Creal Springs
De Soto
Edelstein
Elkhart
Elkville-Dowell
Ellis Grove
Elwin
Emmington
Ewing
Goreville
Henning
Joy
Kirkwood
La Place
La Rose

ILLINOIS (Cont.)
Lima
Loda
Loraine
Magnolia
Marissa
Mendon
Meyer
Milton
Neponset
New Douglas
New Holland
Palmyra
Pawnee
Perry
Pleasant Hill
Roscoe
Rose Hill
Saybrook
Sheridan
Sidney
Somonauk
Stillman Valley
Stonefort
Thompsonville
Tilden
Ursa
Warrensburg
Wayne City
Willow Hill
Winnebago
Wonder Lake
Woodlawn
Yale
*Galesburg (4)
*Herrin
*Lincoln
*Mendota
*Ordill
*Robinson

INDIANA
Akron
Brownsville
Burket
Crothersville
Dunlap
Fritchton
Frankton
Galveston
Hamilton
Hanna
Hanover
Kouts
La Crosse
Laketon
Mays
Mechanicsburg
Medora
Millhousen
North Madison
Perkinsville
Pleasant Lake
Raleigh
St. Joe
Spurgeon
Vallonia
Wheatland
Young America
*Connersville—(2)
*Lafayette—(3)
*Logansport
*La Porte
*Valparaiso

IOWA
Argyle
Atkins
Batavia
Bayard
Bennett
Denmark
Emeline-Iron Hill
Hartwick
Hillsboro
Ionia
Le Clair
Lisbon
Lowden
Marble Rock
Montrose
Oxford Junction
Primrose
Ventura

KANSAS
Dexter
Tribune

KENTUCKY
Bryantsville
Dover
Fernleaf
Grayson
Lewisburg
Liberty
Mays Lick
Olive Hill
Owingsville
Pine Knot
Sharpsburg
Washington
Wilmore
*Lexington—(2)

LOUISIANA
Belcher
Gilliam
Hosston
Ida

MICHIGAN
Avoca
Bath
Burr Oak
Laingsburg
New Lothrop
Rankin
Smiths Creek
Twin Lake
White Pine
*Erie
*Harbor Beach
*Milford
*Muskegon—(3)
*Muskegon Hts.
*Sturgis
*White Pine

MINNESOTA
Alvarado
Argyle
Big Falls
Clarks Grove
Foreston
Gilman
Glyndon
Herman
Kandiyohi

MINNESOTA (Cont.)
Kennedy
Lerdal
Little Fork
Ramey
Rice
Stephen
Woodstock

MISSOURI
Holland

MONTANA
Dagmar
East Froid
Frazer
Larslan
Mouat
Outlook
North Brockton
North of Glasgow
North Hinsdale
North Nashua
Peerless
Reserve
Southeast Lustre
South Flaxville
South Glentana
Westby
West Scobey

NEBRASKA
Arcadia
Arthur
Broadwater
Chambers
Comstock
Dunning
Elsie
Ft. Calhoun
Funk
Kennard
Lewellen
Shelton
Venango
Wynot

NEW JERSEY
Andover
Branchville
Franklin
Hamburg
Ogdensburg

NEW MEXICO
Crown Point
Loving
Shiprock
*Carlsbad

NEW YORK
Luzerne
North Creek
Prattsburg
Pulteney
Urbana

NORTH CAROLINA
Angier
Carthage
Gibsonville
Roaring Gap
Robbins

NORTH DAKOTA
Alamo
Columbus
Epping
Fortuna
Marmon
McGregor
Neche
Ray
Round Prairie
Southwest Ambrose
Stanton
Tower
Wildrose

OHIO
Apple Creek
Bascom
Beaver
Belmore
Berlin
Bristolville
Cairo
Catawba
Cooperdale
Decatur
Dunkirk
East Rochester
Fredericksburg
Gambier
Glouster
Hanoverton
Harpersfield
Harpster
Holgate
Homeworth
Idaho
Jenera
Johnsville
Laura
Letart Falls
Marshallville
Mason
North Benton
North Georgetown
Paris
Piketon
Racine
Rawson
Resaca
Russells Point
Shreve
Smithville
Stryker
Warsaw
Waterville
Waynesfield
Westminster
Wharton
Winona
Woodstock
*Apple Creek
*Bellefontaine
*Bettsville
*Bryan
*Bucyrus—(3)
*Lima—(11)
*Marion—(6)
*Mt. Vernon
*Ottawa
*Shelby—(2)
*Vanwert
*Wooster

OKLAHOMA
Supply

SOUTH CAROLINA
Branchville
Ehrhardt
Estill
Fairfax
Hampton
Jefferson
McClellanville
Pageland
Ridgeland

SOUTH DAKOTA
Estelline

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* — *PABX*

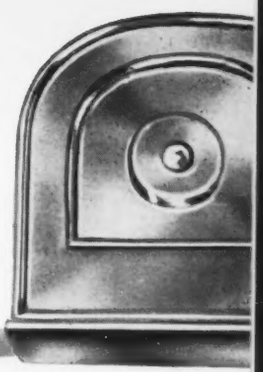
LEICH

When the Leich Dial System was first announced on September 28, 1947, it presented a new idea in dial switching equipment. The idea was basically to **"uncomplicate"** dial switching. For this dial switchboard was easier to understand and maintain, less costly to install. With it, additions could be made by simply jacking in extra equipment.

Today, almost 450 Leich Dial Systems are installed or being built. The basic idea is still a part of every Leich Dial System. Many improvements have been, and still are being made.

But the big idea — to make a better, faster, easier way to convert to dial — is the main reason why the Leich Dial System has been so enthusiastically received.

If you're considering a dial conversion, it will pay to find out about the Leich Dial System.



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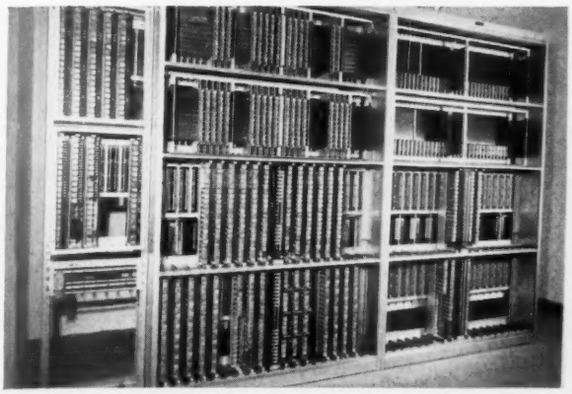

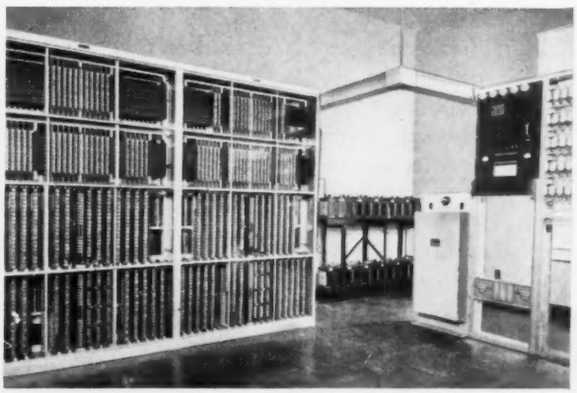

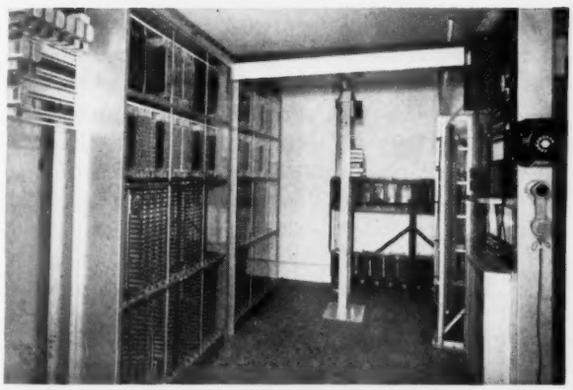

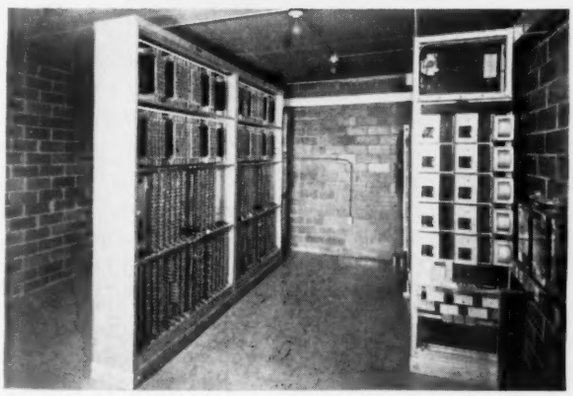

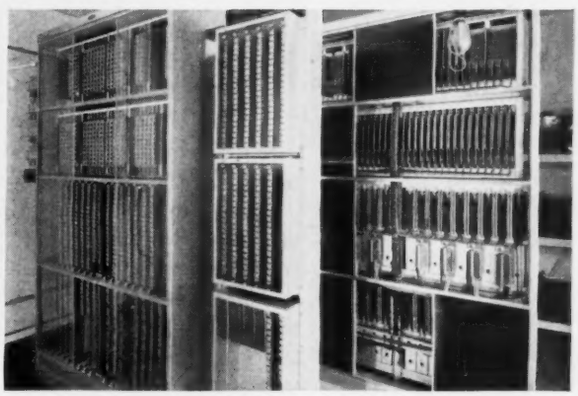

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907
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GENERAL TELEPHONE TELEPHONE SYSTEM

period, say to the calling party, "(*amount*) *please, for the first* (*initial period*)."

To secure a deposit after telling a calling party that there will be an additional charge, say "(*amount*) *please, for the additional* (*No.*) *minutes.*"

PHRASE: Having quoted a rate, ask, "*Do you wish to place a call,*" unless this information has been volunteered.

Giving Reports

WHENEVER YOU give a report on a call which requires further attempts, before releasing the calling party make certain that he has a clear understanding of the action that is to be taken, by whom, and at what time, insofar as this is possible. For example, if you are to make a subsequent attempt, use such expressions as "I will call you at (time) or 'in (No.) minutes' or 'when Mr. (called party) reports' or 'when I can secure a circuit.'"

If the customer is to make the request for the next attempt, say, for example, "Please call long distance operator (No.) when you are ready" or "Will you make your call again, please, when you are ready."

* * *

A very intriguing sign at a shop along a highway which I travel frequently reads: "Antiques — Trash and Treasures." I've often thought the owner must be a student of human nature, or at least one who recognizes how prone we are to cling to the familiar even after it has become outdated.

We are told that it often takes an expert to distinguish between the merely old and the truly antique — antique in the sense of really valuable.

Will you pursue this line of thinking with me in relation to operating practices? In the first part of this article we have given you some revised methods for handling today's traffic. These revisions are the work of experts who are constantly seeking to *improve service* to customers by *replacing* the *outmoded* with 1954 *practices.*

You are operating in 1954, and surely you want your methods to be as up-to-date as your clothes, your car and your TV set. Will you give a thought to sorting out the "trash from the treasure" in your storehouse of "we've always done it this way," practices? Ask yourself, and answer honestly, if the value to you is as great as you imagine, if you are clinging to such time consuming items as:

(1) requesting the name of the calling party when not required (required on collect calls, charge to third number calls, toll credit card calls, messenger calls, calls from a hotel room, conference calls, appointment calls, and overseas calls) (if the calling party volunteers his name it is always entered on the ticket).

(2) obtaining an "ok" from the subscriber when someone uses his telephone. This "days-of-the-dodo bird" practice still takes its toll of operators' work time in some communities. The subscriber is thus relieved of *his responsibility* for controlling the use of facilities furnished to him by the telephone company.

Recognize that your primary obligation is communication — not secretarial service. Equally unfair in its discrimination is the practice of allowing some telephones to be "barred from toll service." The operator is held responsible for screening calls from such telephones. Again the time required for this practice might speed service on other calls.

(3) Requiring the ticket details on an IN Collect Call to a subscriber's station. Realize that the distant company's accounting office will forward the original ticket to you for billing in all cases, therefore, from the standpoint of billing information, the writing of an "IN" ticket in your office is unnecessary work and takes time that might be spent to better advantage on outward calls.

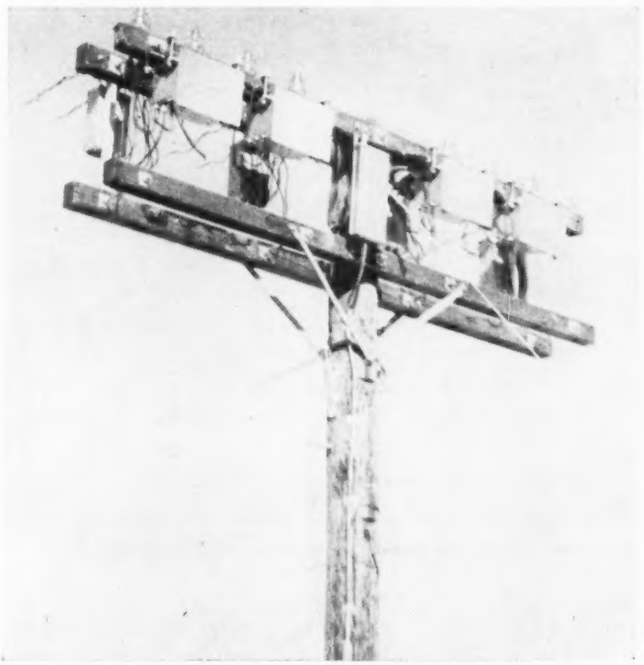
If it is your practice to provide day-to-day billing data at all times for your customers, and you feel you must have the charge information at the time of conversation you can secure this by asking the calling operator to quote the time and charge to you at the time you acknowledge the call as "collect."

A recent transmittal letter issued by the Illinois Bell Telephone Co. to accompany revised toll operating practice pages carried this thought provoking admonition, — — — "it is important for operating forces to do everything practicable to promote long distance usage and, at the same time, give a grade of service as fully sensitive to customer's desires as possible. We urge thoughtful attention to the administration of all long distance practices and most particularly to the *manner, tone* and *helpfulness* with which the service is being rendered."

May all of us whose career is telephony be guided by these thoughts. Next month we will discuss some of the ways in which this spirit of helpfulness may be fostered in, "From a Supervisor's Notebook."—THE END.

THIS TWO-PART article will point out some of the principles of carrier operation on which the choice of line equipment is based.

FIG. 1: — Auxiliary station terminal pole equipped with line filters longitudinal retard coils and protector drainage equipment for four 12-channel carrier systems.



part one

Line Equipment for

OPEN - WIRE CARRIER

By ALAN CULBERTSON

PROPER APPLICATION of line equipment is the key to full use of the complete frequency range of the line.

BASICALLY, ALL that is required for open wire carrier operation is a reasonably well transposed and well maintained pair of line wires between two points. This pair of wires is then equipped with a certain amount of apparatus to provide a transmission path for carrier frequencies. Proper application of line equipment is the key to full use of the complete frequency range of the line. With presently used systems and standard line equipment, a single open wire pair can carry a physical channel, a 3-channel low-frequency carrier system, and a 12-channel high-frequency carrier system.

What Is Line Equipment?

THE TERM "line equipment" usually applies to any apparatus external to the carrier terminal on the high frequency or line side. Included are line filters, matching transformers, protectors, and similar devices. These are standard items offered by manufacturers of carrier equipment. However, the choice of line equipment and the method of application may vary in details with each installation, even with the same type of carrier system. This article is intended to point out some of the principles of carrier operation on which the choice of line equipment is based, in order to assist the carrier user in selection of the proper layout to fit his plant. Information and advice on specific problems is available from most manufacturers and distributors of carrier equipment.

How is The Carrier Line Derived?

THE LINE filter is the most important single item used in deriving the carrier line from a physical pair. Among its important functions are:

(1) Segregating blocks of frequencies present on the physical line and directing them over separate paths to permit independent treatment of each.

(2) Concealing from each frequency band the presence of the circuit path intended for the others. This is done by maintaining a very high impedance so that no circuit suffers a bridging loss because of the paralleling effect of the others.

All carrier systems used on open wire employ the basic method of frequency division multiplexing. Each system occupies a specific frequency band. *Figure* 2 illustrates the manner in which an open wire line may be used to supply up to 16 message circuits in addition to telegraph, using Lenkurt Types 33A and 45A carrier systems as examples.

It would seem that carrier systems operating in different frequency bands would not normally be expected to interfere. Yet several types of line filters are used which merely segregate one system from another. Among the reasons this is done are the following:

(1) Directional filters of many carrier systems are sensitive to equipment connected in parallel with them; line filters can be made so that they are not. Therefore, line filters are

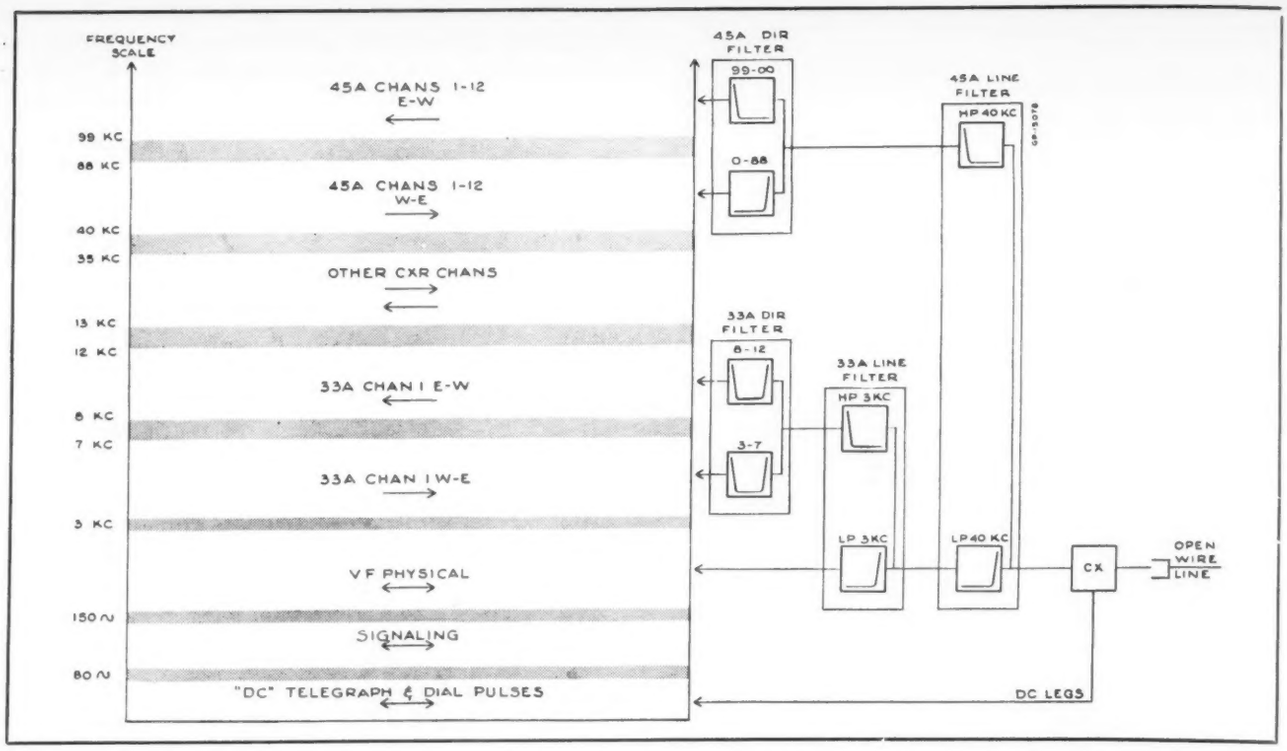


FIG. 2: — Line filters separate the open wire path into frequency "bands" for use by different types of facilities.

used to isolate directional filters from other equipment which might be connected to the line in parallel.

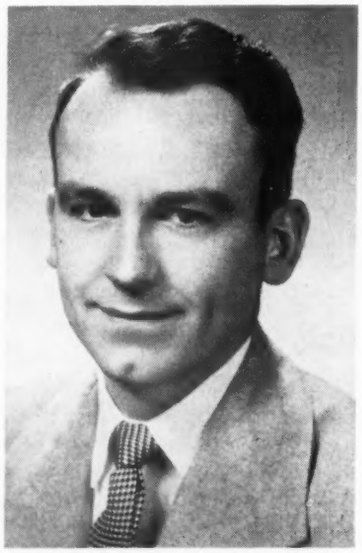
(2) Many directional filters are high-pass/low-pass type. However, this in itself does not make them sufficiently selective. Although they segregate E-W and W-E frequencies of a given carrier system, they accept everything above or below cut-off. Signals of other carrier systems on the line would come in through receiving directional filters. These unwanted signals overload amplifiers, and they might even be demodulated in such a manner as to cause interference to carrier channels.

(3) At bypass or branching points, it may be desirable to send one carrier system one way and one another. Line filters can accomplish this, at very low loss to any system, without necessity for terminals, repeaters, or any power consuming equipment.

(4) Transmission paths for carrier systems operating in different frequency ranges may have different characteristic impedances. For example, a 30-kc carrier loaded cable pair is usually operated between impedances of 600 ohms. However, a non-loaded paper insulated cable pair in the frequency range of 40 to 150 kc has a characteristic impedance of approximately 130 ohms. For optimum operation, these two blocks of carrier frequencies should be separated at the cable pole by line filters for routing over these two paths.

What Are The Requirements Of A Carrier Line?

ANY OF THE frequency bands illustrated in *Figure* 2 may be considered as a satisfactory carrier line facility if it fulfills a few basic conditions. Among these are adequate isolation, proper impedance matching, protection, and relative immunity from crosstalk.



The author, ALAN CULBERTSON, is Manager, Transmission Engineering Dept., Lenkurt Electric Co., San Carlos, Calif.

The most important characteristic of any carrier line is the amount of isolation it has from other bands on the same physical pair. In this regard, the amount of "bridging loss" (energy diverted from other bands) is inversely proportional to the amount of isolation. Therefore, it is desirable to maintain a high degree of isolation to keep both interference between bands and the bridging loss to other bands to a low value.

Another important condition of the carrier line is its impedance match to all facilities encountered between terminals. Impedance matching is necessary to provide good crosstalk performance and proper transmission characteristics.

Principally because of the heavier service load carried by the carrier equipped physical pair, special protective measures are usually required. In addition, other precautions may be taken to increase the immunity of the line to crosstalk. Measures to suppress crosstalk are normally required only when several systems are operating on the same pole line. Interference paths between carrier systems and line filters needed to block these paths are shown in *Figure* 3.

How Much Suppression Should A Line Filter Provide?

SUPPRESSION is the loss introduced into a given path to currents of frequencies not intended to flow in this path. Like most other losses in telephone work, suppression is measured in db. The suppression provided by a specific type of line filter is illustrated in *Figure* 4. For a negligible bridging loss, a suppression of 20 db is usually considered adequate. This means that one percent of the energy is permitted to flow in the undesired path.

Another requirement of line filters is to suppress carrier frequency interference between carrier systems connected through the low-pass section of the line filters. This is illustrated in *Figure* 3*A*. At a low-frequency bypass point of this type, the path between the two independent carrier terminals is blocked only by the low-pass sections of the line filters. The repeating coil may prove useful in reducing longitudinal currents which may flow through the office under this condition (more about longitudinal currents later) but will probably offer very little attenuation to metallic currents of carrier frequency. Since these carrier terminals are supposed to be operating independently, the line filter must be capable of preventing any interaction between them. With unlike (East and West) terminals, the transmitted frequency band of one is the received frequency band of the other, and no suppression is contributed by the directional filters. If both terminals are of the same frequency allocation, the crosstalk between them may be intelligible. A typical requirement for the level of intelligible crosstalk in the drop of the disturbed channel may be on the order of 60 db below the desired signal.

In addition to the required crosstalk suppression, a combination such as shown in *Figure* 3*A* must also contend with the level difference of the two terminals. If, for example, the system shown were a Lenkurt Type 45A, the transmitting level of the East terminal would normally be +17 db at 150 kc. Under severe sleet conditions, receiving level of the West terminal might drop as low as —43 db at this frequency. The total level difference (43+17) of 60 db must be added to the required crosstalk ratio to obtain the total line filter suppression. In this case, 60+60, or 120 db is the total suppression required. Divided between the low-pass sections of the two line filters, the requirement is 60 db for each section at 150 kc. Suppression requirements would be less severe at lower frequencies where gain of the 45A system is less.

Other requirements for line filter suppression will generally be less stringent than those applicable at points where a direct interaction path is available. Generally such interaction paths will be broken up by other central office equipment, or they may not exist at all.

Many other considerations are, of course, involved in determining the amount of suppression to be built into a line filter. In general, the suppression requirements of independent systems operating two ways from a bypass point, as in *Figure* 3*A*, are

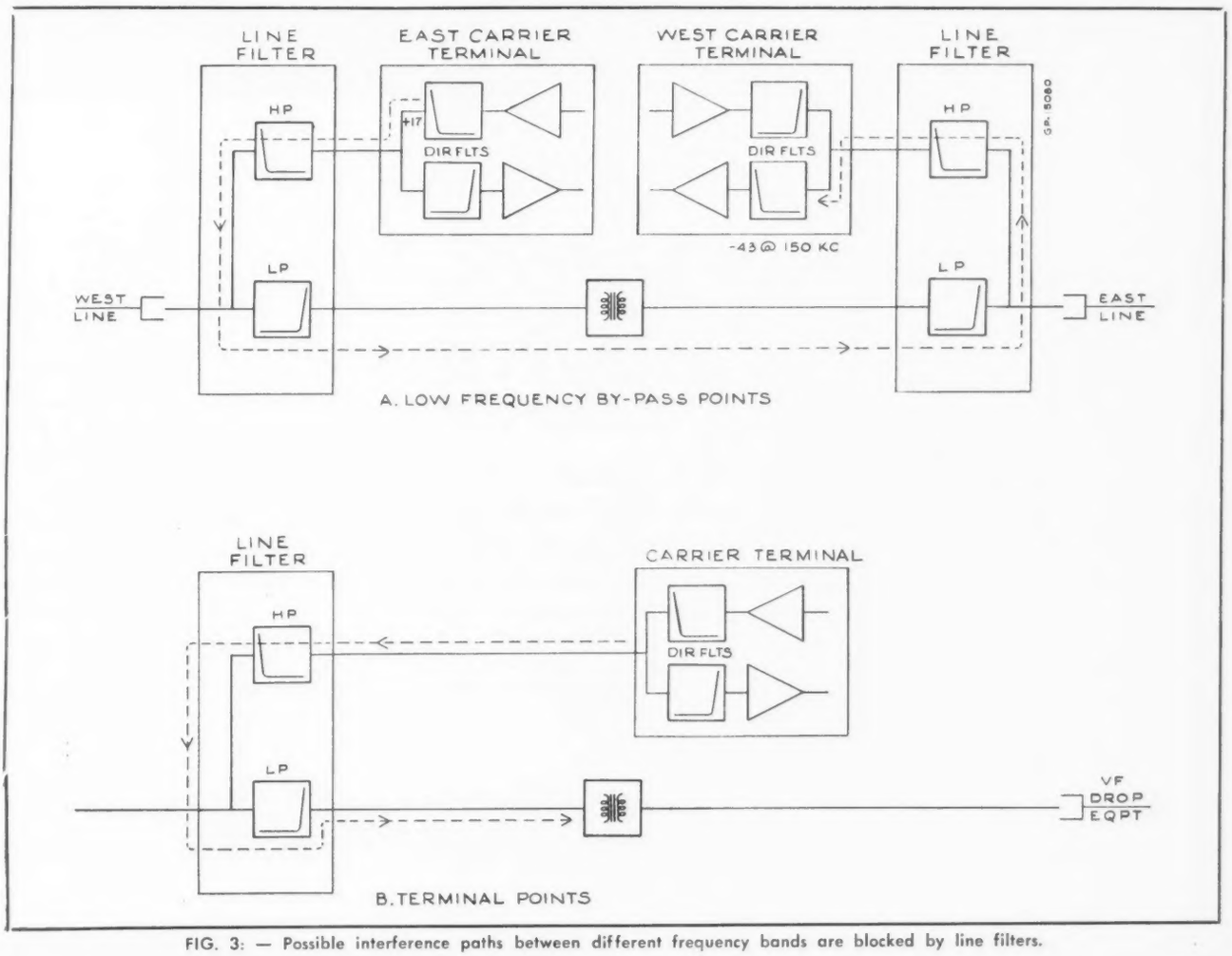


FIG. 3: — Possible interference paths between different frequency bands are blocked by line filters.

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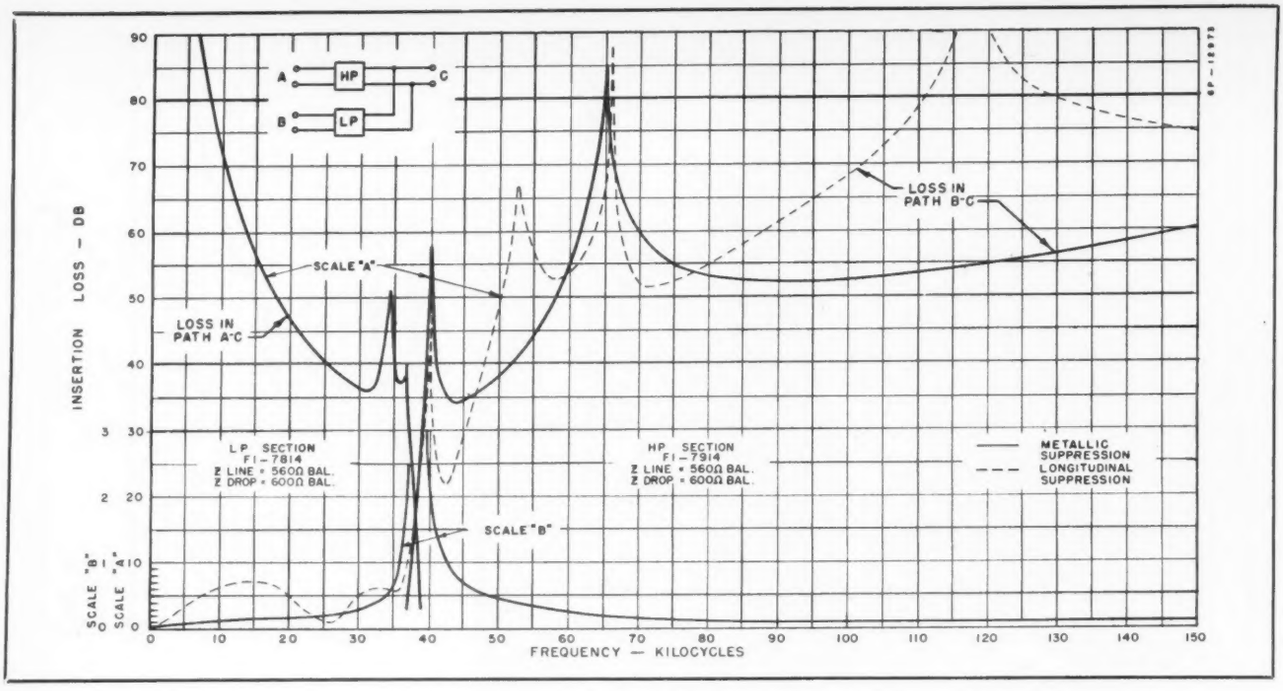


FIG. 4: — Suppression provided by auxiliary station line filters used with Lenkurt Type 45A Carrier Systems.

controlling, although interference between systems operating in different frequency bands must also be considered in each case.

When are "Junction Filters" Practicable?

MANY SITUATIONS where line filters could be used do not actually require the full suppression afforded by such a filter, which is designed for the general case and must have suppression adequate to meet almost all possible conditions. For example, transmitting levels of voice frequency circuits are usually somewhat lower than those of carrier systems, and most carrier equipment is inherently designed so that voice frequency currents are suppressed internally. As a result, problems of voice frequency interference into carrier circuits are somewhat less than the reverse condition.

Carrier interference into v-f circuits is always a definite possibility, especially in situations where a carrier system operates at a frequency very close to the voice range. Since such carrier systems produce tones which are audible in many telephone receivers, their effect must be considered.

In a typical example, 45 db of suppression might be required at 4500 cycles to prevent a low frequency carrier system from interfering with a physical circuit. This suppression could be supplied by a line filter normally recommended for such applications. However, the suppression could also be supplied by other means, in which case a high quality line filter would not be needed. For example, if a voice frequency loaded cable with a cut-off frequency below about 3550 cycles is used in the transmission path of the physical circuit, it will introduce substantial attenuation to carrier frequencies. A length of cable long enough to contribute about 20 db at 4500 cycles, therefore, would permit the filter suppression requirement to be dropped to about 25 db. Such a relaxed requirement would permit a smaller, more inexpensive filter to be employed than the standard line filter. Filters of this type are normally called "Junction Filters" to distinguish them from the more universally applicable line filters.

Suppression of the junction filter might also be supplemented by an office-mounted low-pass filter inserted in the voice-frequency circuit. Several types are available at nominal cost from filter manufacturers, with cut-off frequencies ranging from about 2800 to 5600 cycles. An application of this type is illustrated in *Figure* 5.

If the v-f circuit is repeatered, it is very likely that the repeater is already equipped with a low-pass filter. This also may provide enough added suppression to permit the use of a junction filter.

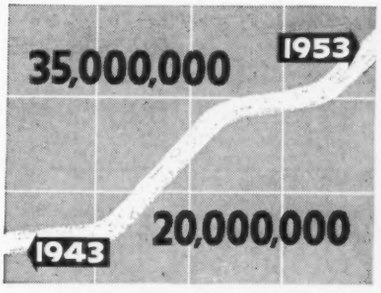
Junction filters are also especially adaptable to separation of frequency bands at intermediate cables. In this case, suppression requirements are quite relaxed, and need only be adequate to reduce bridging losses. If voice-frequency loaded cable were bridged directly across the carrier line, it might absorb most of the carrier-frequency energy flowing past that point. However, by connecting a low-pass filter between the carrier line and the loaded cable at the bridging point, very little power can get through the filter to be dissipated in the bridged cable. In the same manner, the lower frequencies are isolated from the non-loaded cable pairs used to transmit the carrier frequencies.

Junction filters with frequency separation points of 3 and 5 kc are used at intermediate cables with v-f loading. Where 30-kc carrier loading is employed at an intermediate cable, 40-kc junction filters are often used to separate the carrier line of 40 kc and higher from the lower-frequency carrier line and the voice and d-c facilities.

Impedance Matching

AN IMPORTANT characteristic of any carrier line is the accuracy of the impedance match at the junc-

What telephone companies serve two-thirds of the entire area of the U. S.?



AVERAGE LOCAL CALLS PER DAY
for Independent Telephone Companies

ANSWER: *The Independent group of 5,100 telephone companies.*

Yes, it's a fact! The nine million telephones of America's Independents speak for *two-thirds* of the nation!

In large cities and small communities, their growing lines link homes, offices, factories and farmhouses. Their friendly, dependable service provides security and comfort in time of need. Their long distance lines, interconnected with those of the Bell System and with each other, extend nationwide telephone service to all parts of our country—however remote.

Independent Telephone Companies comprise a 1½ billion dollar industry that has doubled in size in the last 10 years. They are still gaining—in service, in strength, in importance. And as the Independents gain, your own telephone service gains in value and usefulness.

• *Telephone instrument in photograph above manufactured by Kellogg Switchboard and Supply Company, Chicago, Ill.*

USITA

United States Independent Telephone Association

Munsey Building : Washington, D. C.

tions between different types of facilities. Impedance matching is important for two reasons:

(1) It permits an approach to the ideal "smooth line" transmission characteristic.

(2) It helps reduce crosstalk by reducing reflections.

Impedance matching devices are incorporated into line filters on both the line and drop sides. A matching network is often used in the line side to adjust the line filter impedance over the approximately 100-ohm range encountered among different types of conventional open-wire lines.

Matching transformers are generally used where the open wire line or the line filter is connected to non-loaded cable facilities.

Paper insulated cable pairs are often loaded for operation up to about 35 kc. Different loading systems are used to match closely the impedance of the different types of open wire lines in this frequency range. In the 35 to 150 kc range, loading systems on spiral-four cable are widely used. These can be adjusted at the time of installation to match precisely the type of open wire line employed. Such arrangements are capable of providing the extreme accuracy required for carrier systems up to 4000 miles in length. For substantially shorter systems, a 600:130 ohm transformer used between the line filter and a non-loaded, paper-insulated cable pair provides a reasonably satisfactory impedance match.

When the ultimate capacity of the lead is only one system, impedance matching measures may be relaxed to a certain extent. However, the more inexpensive techniques, such as the use of transformers at all incidental cables, will usually pay off in better transmission performance even where only one system is employed.

Protection

LIGHTNING discharges and stray currents are usually not discriminating in the manner in which they affect both physical and carrier lines. However, with the added importance of the pair to which carrier facilities are involved, a certain amount of refinement in protective devices is justified.

Protector drainage is a widely used device on lines with many carrier channels, particularly when some of the channels may carry a voice frequency telegraph system on which hits could not be tolerated. A retardation coil is placed in series with the protector blocks, so that operation of the blocks effectively grounds the line only at d-c and at very low frequencies. In this manner, protection is obtained without interrupting higher-frequency transmission. Protector drainage should always be supplemented by directly connected protectors of a higher voltage rating to protect the retard coil against unusually strong surges and to protect the equipment in case the coil should develop an open circuit.

Protection against sneak currents due to magnetic storms, low frequency power induction or low-voltage power contact is augmented by the use of a non-linear "Thyrite" resistance element.

When a thyrite protector is bridged across the physical pair, a very small current flows so long as only normal communications voltages are impressed upon the line. With a rise in voltage, however, current through the thyrite protector rises at a much greater rate, thus tending to absorb power from the foreign source. The principal advantage of the thyrite protector over the open space cutout type, and the feature that makes the thyrite a valuable supplement to it, is the fact that the protective characteristic of the Thyrite is continuously connected to the line, and can protect against damage from continuous voltages at values below the breakdown point of the open-space cutouts.

EDITOR'S NOTE. Part II of this article will appear in the next issue and will discuss Anti-crosstalk line equipment.

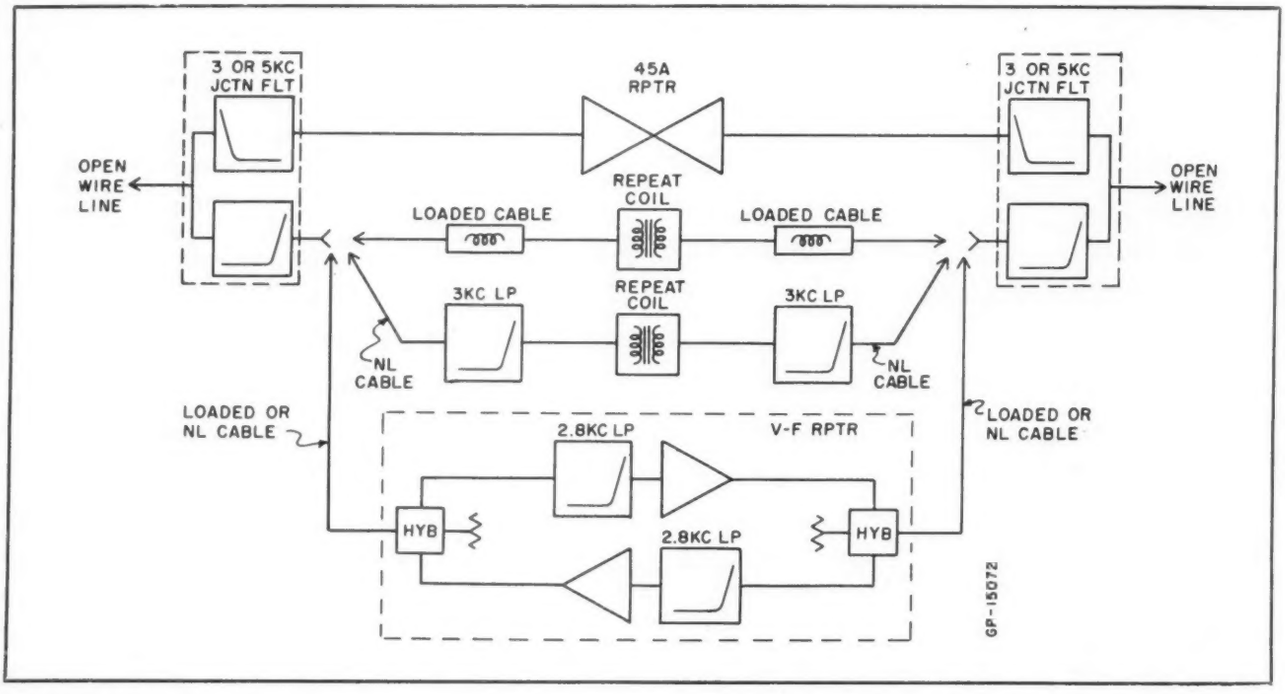


FIG. 5: — Junction filters may be used where suppression requirements are less than that provided by a line filter, or where other means of providing the required suppression are available.

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Top Management Reports

Time To Sell . . .

As a REGULATED monopoly we have not developed intense concentration on sales . . . . the urgency to sell has not been ever present . . . . and we have been complacent to ride along simply fulfilling the service function which has been our responsibility. The fact is that there are few telephone executives today who have had any real training or experience with selling their service. For many years we have been trying to meet an unprecedented demand for service; with thousands upon thousands of held orders, the idea of selling additional service and use was given little, if any, attention. Today the picture is changing and the need for intelligent sales efforts on our part is becoming more and more apparent.

DONALD C. POWER
President
General Tel. Corp.

We have a good product which more people can use. We have additional services to offer which most of our subscribers don't even know about. We have securities to sell to the investing public . . . . and take my word for it, this item of selling to investors is no small job for most of them never heard of the Independent telephone industry, even remotely.

Before we go any further, I should like to point out that I am a business man and an attorney who has spent many years in the telephone business. I am not a telephone operating specialist or an engineer. For that reason perhaps I see some of our problems differently from many of you who have been in the technical end of the telephone business all your lives. I believe the telephone industry urgently needs both types . . . . the technical specialist and the business man.

With the immense reservoir of technical ability now stored within our industry, I have never been concerned with our operating and technological development. I have been deeply concerned . . . . and I have said this on many occasions . . . . at our seeming reluctance to take the necessary steps to earn a reasonable profit on the fair value of our property.

There is nothing immoral about making a legitimate profit. I believe it can be done in the telephone industry if we follow a course of aggressive hard selling which will enable the business end of the telephone industry to keep pace with our technical development.

Let me tell you about one or two things which we have done in the General Telephone System which I believe will demonstrate my point and will be interesting to you.

We decided, after some rather careful planning, to make a con-

Sharing a glimpse of the future with telephone customers

Everyone in the industry knows that all telephone companies must plan ahead to make certain America will continue to enjoy the world's best telephone service.

Sometimes it is good to tell telephone users of this far-sighted planning for it strengthens understanding. The advertisement across the page spreads word of an advance that will benefit all telephone users, and all telephone companies.

It appears in August magazines that reach every part of the U. S., and customers of all of the nation's 5100 telephone companies.

SIMPLE AND EFFICIENT—The ***Bell Solar Battery*** is made of thin, specially treated strips of silicon, an ingredient of common sand. Needs no fuel other than light. Should theoretically last indefinitely, since it has no moving parts and nothing is consumed.

New Bell Solar Battery Converts Sun's Rays Into Electricity

Bell Telephone Laboratories demonstrate new device for using power from the sun

Great and kindly is the sun. Each day it bathes the earth in light, bringing life to everything on earth.

Scientists have long reached for the secret of the sun. For they have known that it sends us nearly as much energy daily as is contained in all known reserves of coal, oil and uranium.

If this energy could be put to use there would be enough to turn every wheel and light every lamp that mankind would ever need.

Now the dream of the ages is closer to realization. For out of the Bell Telephone Laboratories has come the ***Bell Solar Battery*** — a device to convert energy from the sun directly and efficiently into usable amounts of electricity.

Though much development remains to be done, this new battery gives a glimpse of future progress in many fields. Its use with transistors (also invented at Bell Laboratories) offers far-reaching opportunities for improvements and economies in telephone service.

A small ***Bell Solar Battery*** has shown that it can send voices over telephone wires and operate low power radio transmitters. Made to cover a square yard, it can deliver enough power from the sun to light an ordinary reading lamp.

Great benefits for telephone users and for all mankind will come from this forward step in harnessing the limitless power of the sun.

BELL TELEPHONE SYSTEM

centrated sales campaign of extension telephones in March of this year. We prepared our newspaper advertising on a coordinated basis so that the same ads would appear in all papers within our operating areas at the same time. We developed a uniform postage meter ad so that every customer would get the word "extension" put in front of him. We prepared bill inserts telling every subscriber about extension telephones. We called subscribers on the telephone to talk with them personally about extensions. We sent our Commercial people from door to door to discuss extensions; we had them call also on business people. We instructed employes on how to sell extensions. We had our installers carry two telephones into a home or business office when making a primary installation . . . . and taught them to sell extension telephones. We did everything we could to sell extension telephones . . . . and we worked hard at it.

I am happy to tell you that the results exceeded our most optimistic estimates. It can be done but it takes work . . . . sales work . . . . and

OH, BABY!

that means going out to get the business.

Right now we are beginning to push a campaign to persuade our subscribers to use long distance more often. The excise tax on long distance calls has been reduced, as you know; this will help us. We are telling subscribers to call long distance by number to save them and us time. We have furnished our subscribers with personal long distance telephone books for keeping frequently called numbers.

We have our Traffic Department alerted to the public relations job the operators can do in completing long distance calls. We are keeping a record of toll calls completed by each office and if the percentage isn't close to 88-90 percent we find out why. We advertise that people on vacation should call home. We exploit each holiday as a chance to use long distance. We are going to sell long distance as hard as we can and I am certain we will find our long distance revenues climbing.

Earnings are important in selling securities; but good earnings are of little value if potential investors don't know about them. And they won't be interested enough to inquire unless we first sell them on our company. Selling recognition is one of the most difficult jobs facing Independent telephone companies because of the size of the Bell System and the remarkable selling job which the Bell System has done.

Ours is not an impossible job . . . .

CONTINUAL RESEARCH MAKES TAYLOR-COLQUITT POLES
INCREASINGLY BETTER

Below are shown two pilot treating cylinders in the Taylor-Colquitt research laboratories. One is six while the other is 26 feet long.

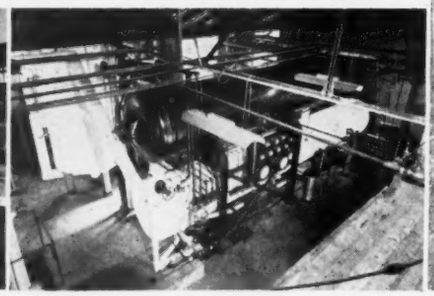
Manned by graduate technologists, these cylinders in conjunction with a large amount of special laboratory apparatus, are used not only to aid in the control of Taylor-Colquitt production operations but also to develop new and better wood preserving techniques.

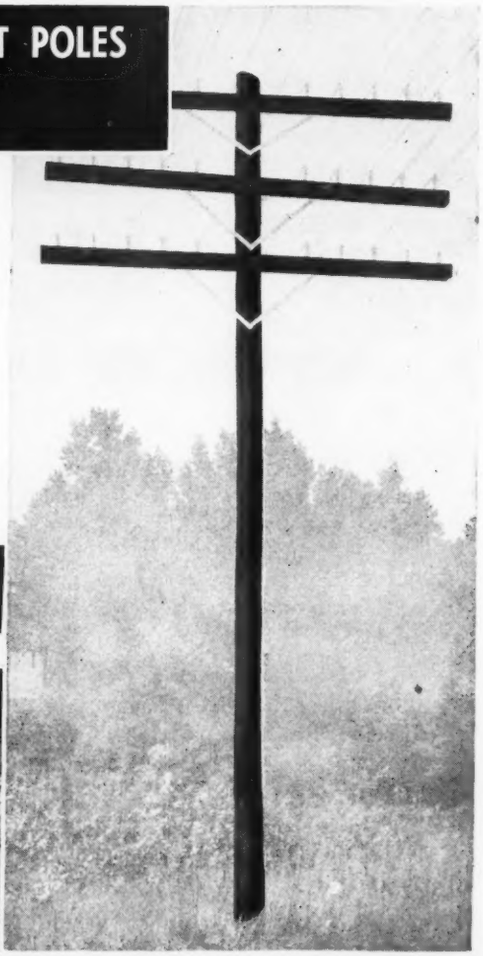
Continual research with this equipment means increasingly better products—increasingly greater values for the ever growing list of telephone companies that specify Taylor-Colquitt poles.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 West Van Buren Street, Chicago 7, Illinois.

TAYLOR-COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA





Runzel... Precision made

TELEPHONE CORDS

Precise in every detail... leg length, trim, terminals, tracer color and stay fastener... Runzel cords make installation a routine matter. Installers like them because they simplify their work.

Subscribers prefer Runzel cords because of clarity of reception and the longer, trouble-free service they give.

There's a Runzel cord for every type and make of instrument.

Write for your copy of Runzel Telephone Cord Catalog.

Operators too, prefer Runzel Cords.

RUNZEL
Cord and Wire Co.
1723 W. MONTROSE AVE.
CHICAGO 41, ILL.

but it will take work . . . . real, vigorous work . . . . and it will take money. As you know, the United States Independent Telephone Association has started a national advertising campaign which I believe will be helpful to our entire industry. This advertising will attract investors . . . . will interest high school and college job applicants for our industry . . . will improve the morale of our own employes, all of whom like to be associated with a well-known business; it will give us added stature with the public and regulatory agencies. These considerations are obviously very valuable to us.

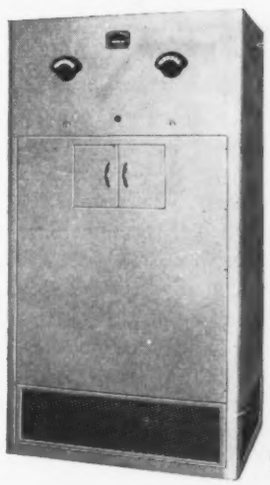
Our ability to interpret our corporate action to the public must become the nucleus for our industry-wide public relations program. Some of our most astute citizens have the idea that public relations functions are to assist with sales. My convictions are that public relations is selling . . . . and nothing more. If your public relations are bad, you will sell only as the customer is forced to buy from you; but let your public relations be sparkling, kindly, real and deep, you will find your customer going out of his way to buy your product or your securities. It is my opinion that if you have a true understanding of your sales job, then you must know that public relations isn't just an added feature that will help you in your business.

I believe if we sell our industry to the public we will facilitate this migration to our areas. I believe if we sell our industry to present and potential investors we shall be able to raise the money to expand our facilities and to meet this new demand for service. I believe we can sell more of our services to more people in our areas . . . . and, through sales . . . . help to increase our earnings. I believe we can sell regulatory commissions on our need to re-price our product. I believe we can sell more people to look to our companies for employment opportunities.

But, we must sell . . . . and sell hard . . . . if we are to accomplish these important gains for the Independent telephone industry. — (*Adapted from a paper presented at the 1954 convention of the New York State Telephone Association by Donald C. Power, president of the General Telephone Corp.*)

FLOTROL

SENSES THE NEED FOR CURRENT



Model 10KB

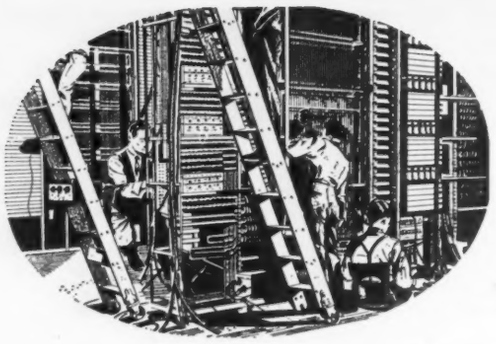
AND SUPPLIES IT!

It's almost unbelievable, the way the FLOTROL output keeps up with the load current—keeps your batteries fully charged—keeps your exchange voltage right on the dot. What's more, it does all this without the use of any moving parts, vacuum tubes, marginal relays, or the like.

If you're planning to replace or add to your charging facilities, don't overlook FLOTROL'S many advantages. Write for Bulletin 160 for complete information on single phase models, from 1/2 ampere to 24 amperes, Bulletin 161 describes three-phase models from 25 amperes to 200 amperes.

LORAIN PRODUCTS CORPORATION
1122 F STREET LORAIN, OHIO

FLOTROL PARTNERS IN DEPENDABILITY SUB-CYCLE



Questions and ANSWERS

Conducted by JAY G. MITCHELL

In this installment of his popular department Mr. Mitchell discusses: (A) Decibel Determination from Voltage Ratios and (B) Definition of "Ampere Turns" in Relay Windings.

Voltage Ratios

Question: We have found the series of discussions on the Decibel Calibration very helpful in our telephone company's operation. We have some meters but nothing that we feel can be relied upon in the determination of transmission losses directly in decibels. That is to say that we have no decibel meter. Is it possible to compute the decibel loss due to a definite circuit condition from accurate determination of the voltage around a fixed impedance read under the conditions that are affecting the circuit?

Answer: This inquiry is not too clear but it is thought to be a request for a method of relating *voltage ratios*, instead of *power ratios* to the computation of the decibels, loss or gain, in transmission effectiveness.

It is quite possible to use the ratio of one alternating voltage to another, *for the same impedance* in the metering loop, to compute the decibel loss or gain. This will be clear from the following. Assuming that an alternating sine wave current of 1,000 cycles is sent into a circuit across which an impedance of 600 ohms is connected and that the alternating current voltage around this impedance of 600 ohms is read. Then assume that the doubtful loop is added across the original circuit and the alternating current voltage under the same conditions of frequency and metering impedance (600 ohms) is again read. The ratio between the alternating current voltage on the circuit around the metering impedance and that around it *after the unknown doubtful circuit has been connected* with the same frequency and power input is the *voltage ratio*. Since the metering impedance is the *same in both instances* the ratio of the two observed voltages may be used as the basis for the computation of the decibels represented by the two circuit conditions, one without the doubtful connecting loop attached and one with it included. In any electrical circuit

$$1.\ \text{Original Power} = \frac{E^2}{Z}$$

where E is the voltage and Z is the impedance.

With the different electrical condition resulting from the connection of the doubtful circuit, for illustration, the formula becomes different because the observed voltage is not now the same around the metering impedance (which must, of course remain unchanged). The different power under these circumstances is

$$2.\ \text{Resulting Power} \quad \frac{E'^2}{Z}$$

The ratio between these two powers is obtained by dividing the one by the other. In other words the power ratio instead of being expressed by two values in *watts* is now expressed by expression 1. divided by expression 2. which obviously gives a value of

$$\frac{E^2}{E'^2} \quad \text{which is:}$$

3. Power Ratio

Now it will be remembered that the logarithm of the power ratio is multiplied by 10 the result will also be decibels. Therefore if the *voltage ratio* logarithm is doubled and then multiplied by 10 the result will also be an expression of the decibel difference between the two circuit conditions. In other words the power ratio is the basis of the determination of the decibels and it may be expressed as the *square* of the voltage ratio as well as the direct ratio of the powers involved. An interesting development of this relation is that for any given number of decibels in a voltage ratio table the number of decibels corresponding to a like *power ratio*, as distinguished from a given *voltage ratio*, is one half of the former.

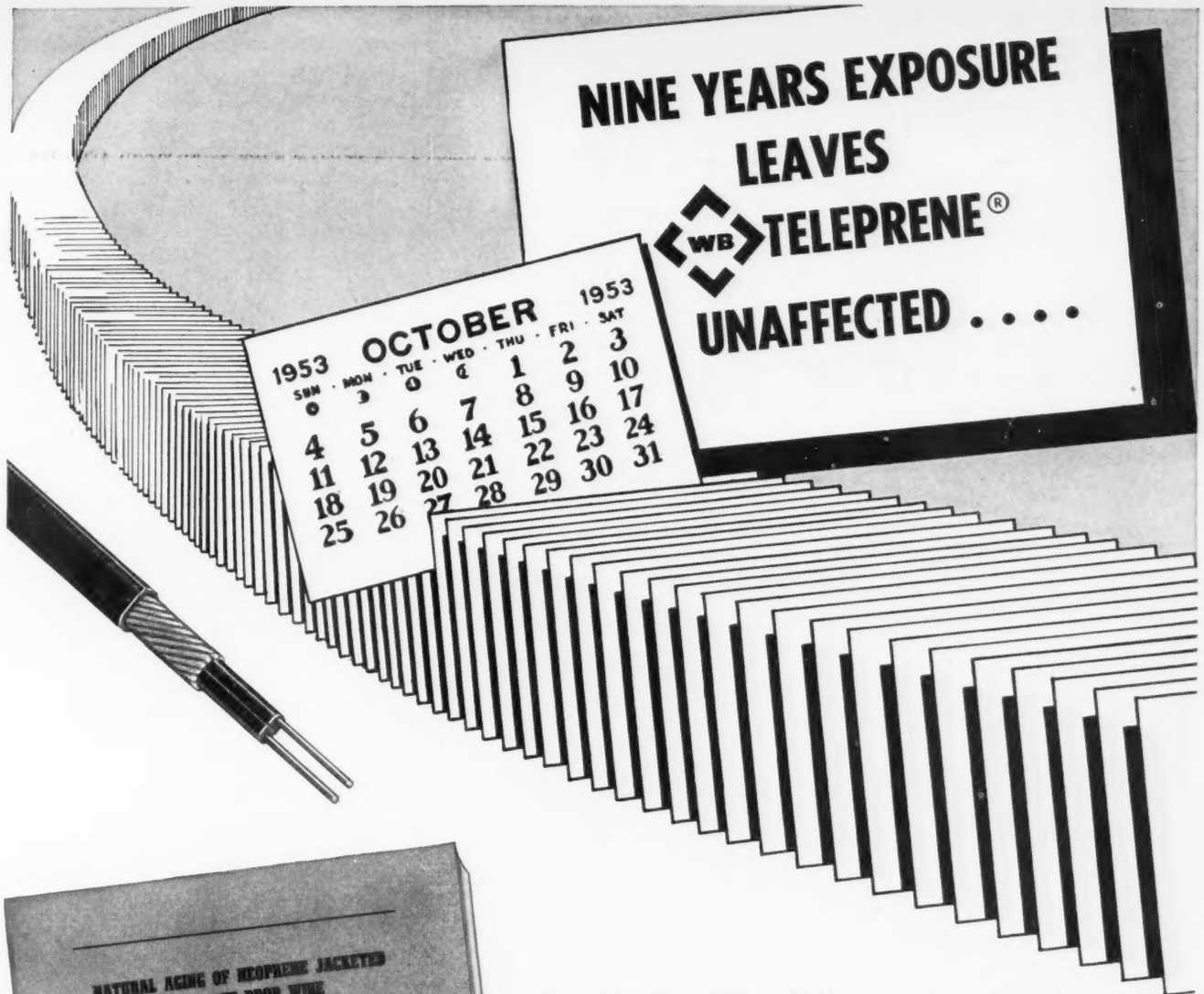
Ampere Turns

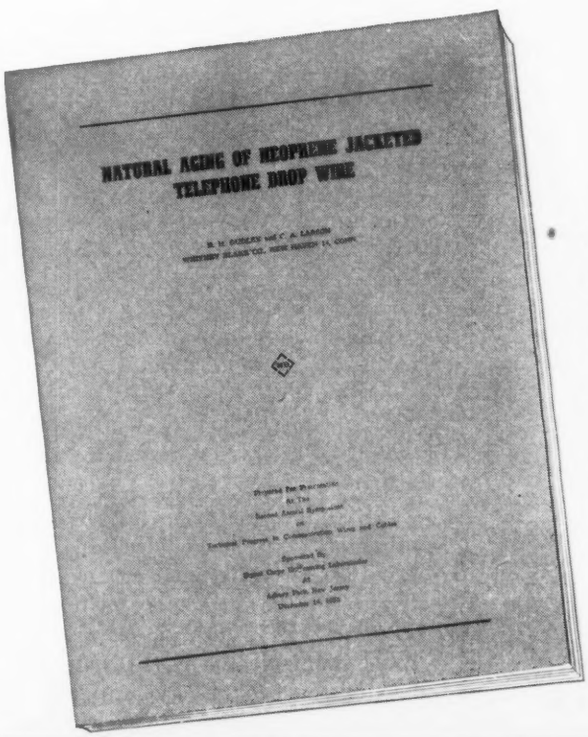
Question: Will you please explain the meaning of the term "Ampere Turns." The expression was used by the engineer of a telephone equipment manufacturer in discussing the length of line circuit that might be considered reasonable when positive supervision, of common battery connections, is definitely assured.

Answer: It is a rather common error to extend common battery telephone service into areas where the necessary line circuit is so long that its resistance alone becomes the cause of insufficient current supply for talking and supervision. This is because the telephone transmitter, when the outgoing transmission is weak, cannot be supplied over the high resistance circuit with adequate electrical power and the supervisory relays are sluggish and cannot be positively operated for the same reason. In the case of the telephone transmitter insufficient current supply obviously must be corrected on such circuits. The operation of supervisory relays under such line conditions is very difficult because they may not be positive in operation as the line is placed in use and may have a tendency to be released prematurely under the same condition due to the high resistance of the subscribers circuit.

Any relay which is intended to be operated by electrical power from the central office over a line circuit, this

NINE YEARS EXPOSURE LEAVES WB TELEPRENE® UNAFFECTED . . . .





In 1944, when Whitney Blake's neoprene-jacketed drop wire was first produced, samples were installed in a span on the roof of the Whitney Blake plant.

From time to time new samples were added and all were critically examined in October, 1953. None of these samples had changed in appearance, none showed cracks or other signs of deterioration and all had retained their flexibility . . . and remember, the oldest sample had been exposed to Connecticut weather for more than nine years.

These tests clearly show the superior lasting qualities of WB TELEPRENE; qualities that mean substantial savings to the independent telephone companies. You can get a copy of the engineers' report on these tests simply by asking for it — we'll send yours to you promptly — write today.

Once you read this report you'll see why you should always specify Whitney Blake high quality telephone wire and cable for all your needs.

Well Built Wires Since 1899

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WHITNEY BLAKE COMPANY

NEW HAVEN 14, CONNECTICUT

NATCO
CLAY CONDUIT

The proved and standard protection for Underground Telephone Cables.
Highest quality and full line of shapes.

NATCO CORPORATION
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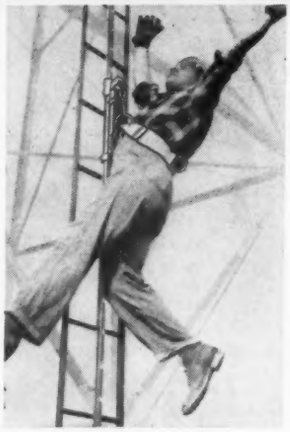
You Can't Fall
IT'S A LIFE SAVER



IT LOCKS—IT HOLDS
Prevents death and injuries from falling.

SAFETY DEVICE FOR LADDERS
Easy and inexpensive to install: Clamps to rung, peg, pole or frame. No welding or cutting.
Simple to operate: No upkeep. Requires no attention from climber. Anyone can use it.
Safety Specifications: High safety factor. Will not rust or corrode.

Safety Tower Ladder Co.
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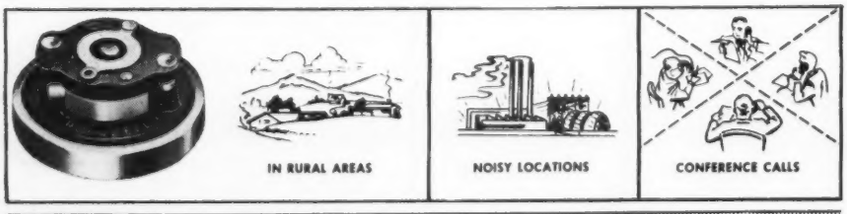
BURBANK: CALIFORNIA
ALSO MANUFACTURERS: SAFETY LIFELINE LOCK
Member
National Safety Council

HEAR...IT IS!
Roanwell's
NEW "ALL CLEAR" RA-1H RECEIVER ELEMENT

Now you can end subscribers' complaints of poor voice reception, quickly and inexpensively . . . with the new Roanwell RA-1H receiver. This new element supplies almost 4 times the acoustical energy and its output is about 5 d.b. higher, over the normal speech response range, than receivers commonly in use.

WRITE FOR DETAILED DATA SHEET



R/C
Roanwell CORPORATION
662 PACIFIC STREET • BROOKLYN 17, N. Y.

may be a line relay which should be operated when a call is initiated or a supervisory relay which should remain positively operated during the existence of the connection, requires its normal number of "Ampere Turns." The "Ampere Turns" of any electromagnet, such as a telephone relay, is expressed as the product of the number of turns in its winding and the strength of the operating current in amperes. The pulling power of any electromagnet, such as a telephone relay winding and core, is directly related to the Ampere Turns and is also directly related to the length and cross section of the iron in the core and frame, and the length of the "Air Gap," which is the space between the end of the relay core and the relay armature when the relay is not operated. The magnetic pull on the relay armature, which is effective in operating the relay contact springs, is closely related to the product of the number of turns in the relay winding and the current strength flowing through the winding when it is included in a closed circuit such as a subscriber's line.

The design of relays for telephone equipment has become almost standardized. If, however, an entirely new relay is to be designed the number of ampere turns required to produce the necessary number of "Magnetic Lines of Force" in each part of the magnetic circuit of the proposed relay is computed. A definite number of ampere turns will be alloted to the production of the necessary number of magnetic lines of force in the "Air Gap," another number to insure the required number of magnetic lines of force in each segment of the iron portion of the relay frame and so forth.

The number of magnetic lines of force that will be required in the "Air Gap" is determined by the strength of the magnetic pull necessary and this, in turn, is determined by the mechanical work that must be done by the armature and springs.

However the design of telephone relays has been so thoroughly systematized that a stock winding can almost always be used for any stock mechanical task to be done by the relay itself. As a very rough illustrative example it may be said that the number of "Ampere Turns" of most ordinary telephone relays lies

Please turn to Page 66

Remington Rand

BETTER BUSINESS METHODS

For Greater Profits Through Lower Costs

The new Remington Rand Telephone Toll and Tax Billing Machine was developed to handle the new 10% tax. It provides fast, efficient toll billing at lowest cost.

New Public Utility Counters Serve Both Customer and Clerk

Remington Rand sectional counter provides work-station efficiency in the office of the Hutchinson (Minn.) Telephone Company.

The new Remington Rand Sectional Customer Service Counters are popular with everybody. Customers like the open and friendly appearance. They can transact business easily and comfortably over this 44" high counter. Service is speeded up since complete facilities are within arm's reach for handling all normal business. A continuous parcel shelf permits the customer who has just been served to move aside for the next customer. And the bookkeeper or cashier is always facing front.

The working side of the counter is a model of efficiency. While serving customers, the clerk remains comfortably seated at her desk between a safe and file containing all customer records. Insulated units give vital records a minimum of one hour's *certified* fire protection. The desk top provides ample room for business machines and all cashiering and bookkeeping operations.

Our 12-page booklet illustrates many work station combinations, utilizing corner units, extension tables, cupboard units and record stacks. Steel filing units used with these counters are standard and available for every business requirement. See your local Remington Rand representative or send for **SC764.**

Visible Totals Speed Toll Billing with New 10% Tax

Now you can handle all your toll billing with one simple, inexpensive machine. The Remington Rand Accounting Machine for Simplified Toll Billing has a fast, touch-method standard typewriter keyboard that any operator can use without special training. Toll charges automatically accumulate as they are written on toll bills. A special Toll and Tax Register automatically computes the total of the toll charges *and* the tax for each bill—enabling operator to complete the bill immediately.

This machine has a fully electrified keyboard for 100% light-touch operation of all keys for printing and carriage movement. It has only 10 numeral keys for all figurework—complete visibility of writing line and totals—actually *all* the features you need for the highest toll billing production. It also has *only* the features you need—no "extras" that would increase its cost without increasing its usefulness. And because of Remington Rand built-in versatility, it can be used for writing customer bills—or any other accounting work, if time is available.

See your local Remington Rand representative as soon as convenient for the full story on telephone billing the fast, efficient Remington Rand way. Or get an illustrated bulletin by circling **AB938** on the coupon.

Remington Rand

Room 1847, 315 Fourth Ave., New York 10

Yes, I'd like the literature circled.

SC764 **AB938**

Name_____

Company_____

Address_____

City_____ Zone____ State_____

TEL-4

Commission NEWS Briefs

A review by Telephone Engineer editors of recent rulings, decisions and orders issued by regulatory bodies.

Footville Company To Modernize System

THE WISCONSIN Public Service Commission recently authorized *The Footville Telephone Company*, Rock County, to change to dial operation and to construct a new building at a cost of $35,865.

General of Calif. to Compare Radio Performances

THE GENERAL Telephone Co. of California, largest Independent operating telephone company in the United States, received FCC permission to conduct comparative transmission surveys with 450 megacyle mobile radiotelephone equipment. Purpose of the tests is to determine technical requirements for establishing a 450 mc mobile radio system with performance standards of the company's present 152 mc network in the Los Angeles metropolitan area.

The tests will compare Radio Corp. of America equipment, both 152 and 450 mc frequencies, to determine base receiver sites, antenna gain and transmitter power requirements. General of California stated that "due to the unusual terrain conditions in this area, it is deemed fundamentally necessary that actual measurements be made in order to determine transmission conditions."

New York Commission Approves Rate Increase

THE NEW YORK Public Service Commission approved a tariff amendment filed by *Lockwood (N. Y.) Telephone Company* designed to increase rates by an estimated $850 annually. The company serves 110 stations in Lockwood and the surrounding rural area.

In filing its new tariff, the company reported an operating loss in 1953 and said the higher rates were needed if it were to be able to continue to render adequate service. Under the new tariffs, monthly residential rates will be increased 25 cents for four-party service, by 50 cents for individual line service and by 75 cents for multiparty service. Extension stations for residential service will be increased by 25 cents and a new two-party service is offered at $3.00 monthly. Business rates are increased by 25 cents for individual service and by 75 cents for multiparty lines, with extension stations being increased by 10 cents.

Smithfield Mutual To Increase Rates

THE NEBRASKA State Railway Commission completed study of the application of the *Smithfield (Neb.) Mutual Telephone Co.* for a rate increase, found an emergency to exist, and ordered new rates which will produce additional gross revenue of $744 a year.

An analysis of the case shows that under the new rate schedule, the company would have estimated annual operating revenue of $2,115.12 and estimated annual operating expenses of $1,928.33, which includes all taxes. The net profit for a year will be about $186.79.

"Quote"

"The free enterprise system which has made this nation great is based upon the principle that services and goods cannot be sold for a price higher than the value which the purchaser places upon them . . . The principle of pricing local telephone rates on the relative value of service is therefore not something unique to the telephone business. Telephone rates should be spread on the basis of 'equal rates for equal service.' The relative value of service in local calling areas is susceptible to measurement, this measurement being station availability." — Paul Beck, Chief of the Valuation & Rate Dept. of the city and county of San Francisco, at 1954 convention of the California Independent Tel. Assoc.

Territory Invasion Charge Dismissed By Commission

THE MINNESOTA Railroad & Warehouse Commission has rejected complaint of the *Farmers Mutual Telephone Co., Cerro Gordo, Minn.*, against *Central Telephone Co.* for alleged territory invasion. The Commission concluded that Central did not invade Mutual's territory when it installed service for three farmers through its Dawson, Minn., exchange.

The commission declared that the three farmers agreed to take service from the mutual provided they would receive extended area service from Central's Dawson exchange. When it was decided that extended area service would not be provided, they became Central subscribers. The only claim the mutual had to the territory, the commission held, was that one of the farmers formerly was served via a previously-existing toll line between Dawson and Cerro Gordo, and the mutual company was unable to provide this service after it converted to dial.

State Commissioners Meet at Sun Valley, Ida.

FOUR TALKS on subjects of considerable regulatory interest — distribution of telephone rate increases; customer toll dialing; the responsibil-

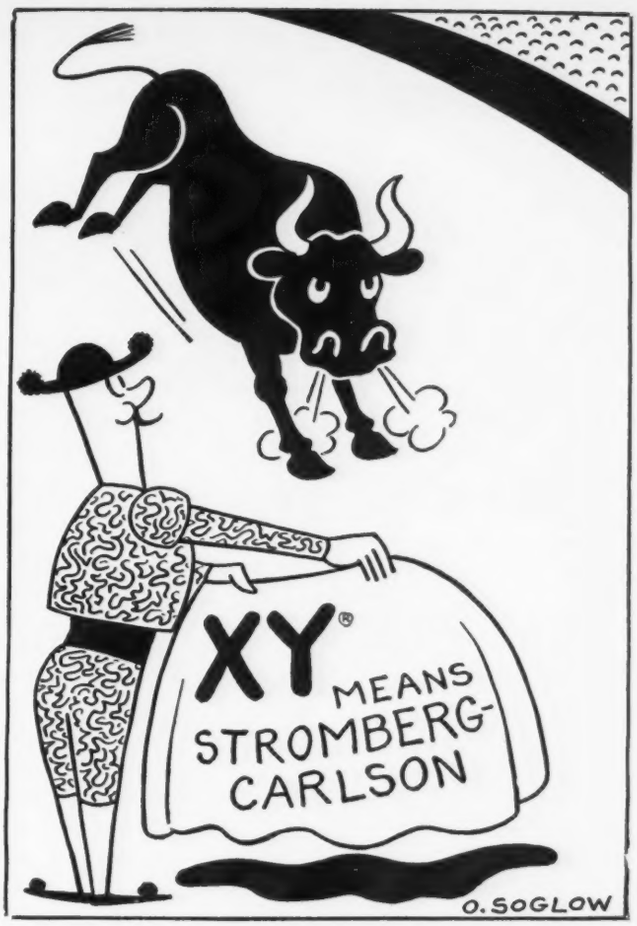
LARGE OR SMALL

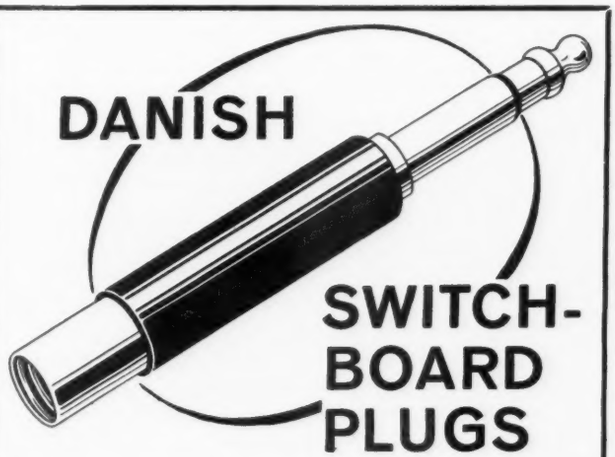
—all directories are important printing at Donnelley's. Please feel free to call us about yours. We may be able to help you improve it.

The Lakeside Press

R. R. Donnelley & Sons Company

350 East Twenty-second Street, Chicago 16





The plastic insulation injected between the conductors stays solid. It covers the edge of the brass shell, positively preventing cause of most shorts. Invented and used exclusively by TELEFON FABRIK AUTOMATIC A/S since 1912. These plugs provide unsurpassed precision in machining, solidity of construction, and high insulation safety.

Available as replacements for all popular two-and three conductor plugs.

The most popular types are stocked by our sales distributors in U. S.

BUCKEYE
Telephone & Supply Co.
Columbus 6, Ohio

SUTTLE
Equipment Co.
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Write for the catalog.

TELEFON FABRIK AUTOMATIC A/S
COPENHAGEN DENMARK

Do you know these facts about FLEXIDUCT?

It's the new rubber floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws and fasteners. Flexiducts' flexibility allows it to adhere evenly and securely to all types of floor surfaces and it is adaptable for installations ranging from 2 conductors to 25 pair switchboard cables. Write for complete information regarding Flexiduct and your wiring problem today.

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For further information, write for circular 753 A.

BUCKEYE TELEPHONE & SUPPLY COMPANY
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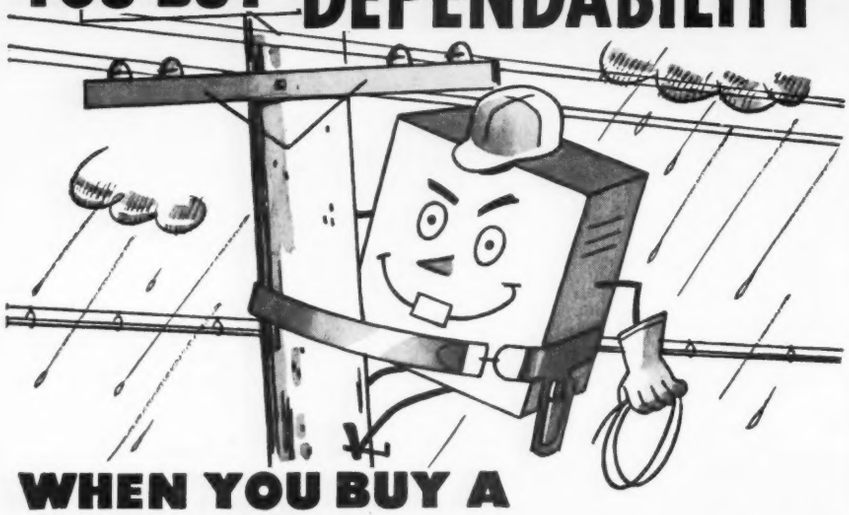
YOU BUY DEPENDABILITY



WHEN YOU BUY A

RAYTHEON **RECTICHARGER**

(BATTERY CHARGER)

Dependability is the number one requirement of equipment for the Telephone Industry.

RAYTHEON **ENGINEERING REPORT**

SUBJECT: Oldest RectiChargeR
Careful testing and inspection of this unit reveals:

1. Electrical qualities in no way impaired (see chart).
2. A noticeable lack of rust or corrosion on chassis, hardware and components.
3. Original paint shows no sign of deterioration.
4. No evidence of embrittlement or cracking in varnish on magnetic components.
5. All hardware sound and secure.
6. Cable firm and unbroken.
7. Lacing intact with all wiring firmly in original position.
8. All soldered joints secure and strong.

(Signed) George L. Blais
ENGINEERING DEPT.

The dependability of Raytheon RectiChargeRs is amply demonstrated by the service records of units now in use. A typical example is shown in the Engineering Report at the right. And there's no reason why the "old" RectiChargeR described in the report can't go on giving the same faithful service for many more years.

It's no accident that Raytheon RectiChargeRs are setting performance records. Every detail of electrical and mechanical design has been carefully worked out with dependability as the guiding principle.

You get dependability automatically when you buy a Raytheon RectiChargeR, just as you get fully automatic battery charging — with constant voltage output over the complete load range regardless of input change — without under or overcharging.

Specify Raytheon RectiChargeRs and RectiFilteRs for completely dependable Telephone service. Your supplier offers a complete line for all requirements. Ask him for details or write direct.

RAYTHEON
MANUFACTURING COMPANY
EQUIPMENT SALES DIVISION
DEPT. 6120-TE, WALTHAM 54, MASSACHUSETTS
DISTRICT OFFICES: BOSTON, NEW YORK, CLEVELAND, CHICAGO, NEW ORLEANS, LOS ANGELES (WILMINGTON), SAN FRANCISCO, SEATTLE
INTERNATIONAL OPERATIONS: 589 FIFTH AVE., NEW YORK CITY
RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.
*Reg. U. S. Pat. Off.

ity of keeping the public informed; and community television antenna systems — were among the highlights from a communications standpoint of the recent Mountain-Pacific States Conference of Public Service Commissioners in Sun Valley, Ida.

Speakers included President C. L. (Roy) Doherty of the National Association of Railroad & Utilities Commissioners; President W. Roy Jarmon of the General Telephone Co. of the Northwest; Colorado Public Utilities Commissioner Joseph W. Hawley; and Washington Public Service Commissioner Robert D. Yeomans.

The conference elected Oregon Public Utilities Commissioner C. H. Heltzel as its president for next year. It also elected Arizona Commissioner William T. Brooks as vice president, and named Jefferson Church, transportation rate chief of the Wyoming Commission, as secretary-treasurer. Reno, Nev., is to be next year's conference location.

Mr. Doherty, of the South Dakota Public Utilities Commission, emphasized that a commission should not be "derelict and remiss" in keeping the public fully informed of the reasons behind its decision and the responsibility it carries out. "Bringing a closer understanding between the public and the work of the public service commissions presents one of the major problems facing the regulatory bodies today," he said.

He declared that among the things the public should understand are that utility rates have risen far less than other cost-of-living items, and that the tremendous tax component in utility rates makes it necessary for commissions to allow increases of more than double the amount retained by the companies after taxes.

In a detailed explanation of operator toll dialing, Mr. Jarmon reviewed both the background of the service and the extensive experience of his own company in providing regional toll dialing networks suitable for the ultimate cutover to nationwide customer toll dialing. He stressed that the nationwide numbering plan covers the United States and Canada, with each of the more than 20,000 central offices given a distinct designation for use in the service.

At General of the Northwest, he brought out, two networks are already in operation, while the third, centering at Wenatchee, Wash., be-

Here's Proof of Performance...

Pressure-creosoted poles used exclusively since 1929 with a replacement rate of less than 1%

● A blight that affected native chestnut wood in 1927 turned a major Connecticut power company to the use of pressure-creosoted transmission line poles. The results were so satisfactory that the company has used nothing but pressure-creosoted poles since 1929.

Today, one of the company's operating divisions has 37,877 pressure-creosoted poles carrying 866 miles of overhead installations. Replacements, except for relocations have run less than one per cent.

Pressure-creosoted poles have proved themselves in actual service to be long-life poles. And you can count on top performance when USS Creosote is used in the treating process.

For complete information on USS Creosote, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

THIS PRESSURE-CREOSOTED POLE has been in service for 20 years and will be re-used after grading relocation. Its excellent condition at the ground line is apparent.

THESE PRESSURE-CREOSOTED Southern yellow pine poles have been in the ground at this location in Connecticut for 22 years. Not one pole has been lost to ground rot since installation.

USS CREOSOTE

4-1659

UNITED STATES STEEL

gan operation, concurrently with the dial conversion at the Wenatchee exchange Saturday, June 26. "The company started with customer toll dialing between exchanges of a small network and added communities to that network as it developed their regional interests were similar," he brought out. "Our intentions are to establish other networks which will also tie in with larger traffic centers."

Speaking on distribution of telephone rate increases among exchanges, Commissioner Hawley brought out that his agency has had considerable experience with this subject, in view of the "home rule" law in Colorado and the decision of the state Supreme Court two years ago that the commission may fix rates on a statewide basis.

Contrasting the "value of service" and "cost of service" concepts of rate making, he pointed out that the Colorado commission found that "value of service" is the determining factor in spreading rates between classes of services and exchanges. "We felt that the consideration of costs on other than the basis of overall state operation contributed nothing to the determination of the question," he added.

Commissioner Hawley added, "In the long run, considering the many variations inherent in operating conditions, treatment of subscribers by groups of localities from a rate standpoint will average out if similar localities in the state are treated alike."

In his discussion of possible state commission regulation of community TV antenna systems, Commissioner Yeomans pointed out that the Wisconsin commission has specifically ruled that the FCC has preempted authority over such operations, while the Utah Attorney General has handed down a ruling that the commission of the state would have jurisdiction over the systems.

The Washington commission, he added, has concluded informally that community antenna operations "would not come under our jurisdiction." However, he noted that the FCC has not taken jurisdiction, although the matter is under staff study.

Cincinnati & Suburban Files Reduced Rate Schedules

Following an order of the Ohio Public Utilities Commission requiring reduction of a previously-approved rate increase, the *Cincinnati & Suburban Bell Telephone Co.* filed new tariffs to produce the required $1,650,000 a year cut-back.

Since it has been a company policy for more than 50 years to have uniform rates in the metropolitan areas of Greater Cincinnati, it is anticipated that the *Citizens Telephone Co.*, a Cincinnati & Suburban Bell subsidiary, will file for similar reductions with the Kentucky Public Service Commission.

A reduction of 35 cents monthly has been applied to all Ohio residence lines, while business service base rates have been cut $1.50 in the larger exchanges and 75 cents monthly in the other areas.

Cutbacks also have been applied to business trunk lines, semi-public service guarantees, hotel message charges, intrastate toll rates, and service connection rates.

New Rates For Springview Exchange Telephone Company

The Nebraska State Railway Commission approved a new rate schedule for the *Springview (Neb.) Exchange Telephone Co.* which will produce additional gross revenue of about $1,029 a year.

Under the new rates, the company's total annual telephone operating revenue is estimated at $7,967.55. Total annual telephone operating expenses are estimated to be $7,312.96 exclusive of taxes of about $232.20, which results in a 3.04 percent return on an adjusted net book rate base of $13,906.99.

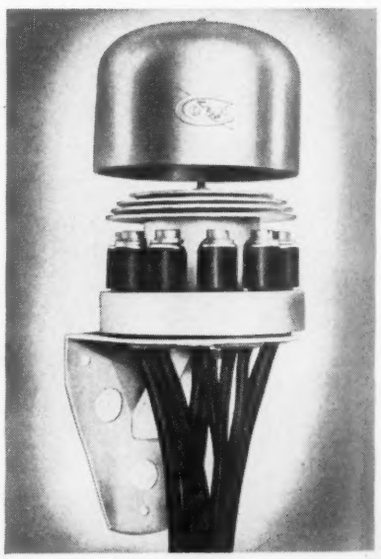
Questions and answers

Concluded from Page 60

somewhere between 175 and 125. For an entirely new relay the design should be checked, of course, by actual measurements with the experimental model. This is because theoretical design, in the case of relays as well as other items of electrical equipment, may overlook some vital consideration which will be disclosed by physical test. If of sufficient general interest the rule of thumb method of making the magnetic circuit computations for relay design will be set out in a future issue in detail —The End.

Construction
and
WITH THE DOUBLE
STROMBERG-CARLSON
LEADING

New
Cook 5-Circuit
power cross protector



You can protect 5 circuits with this new Cook Hy-Cap Power Cross Protector. It provides a single assembly for 5 circuits to be mounted on a 10-pin arm, requiring only a single ground wire.

It is easy to install with only three mounting screws and five factory installed pigtail connections. Pole gaining and through bolts are eliminated.

Small in size, unit is weatherproofed with an aluminum cover and sealed with rubber grommets. Heat radiation fins provide an extended arcing period, and light gauge self-destroying cover prevents carbon breakdown.

Each electrode is equipped with a fusible element which melts and further reduces impedance of the fault current path when the power cross continues over an extended period.

Manufactured by Cook Electric Company

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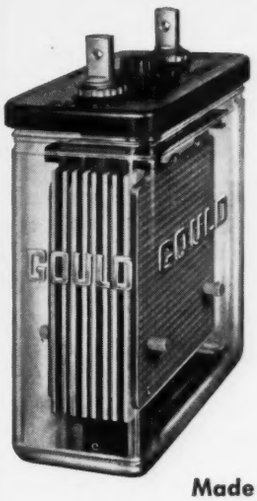
nd Supplies
OUBLE GUARANTEE OF
RLSON AND AMERICA'S
ADING MANUFACTURERS

the battery that lasts practically forever



gould planté

For long life and uniform dependable service, no other telephone battery equals the Gould Planté. It has rolled up amazing performance records, remaining in active full-float service for 20 years, 30 years and longer!

In the Planté, *all* of each positive plate is pure lead, containing *no* antimonial impurities. Thus, Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Planté batteries float at constant voltage and maintain rated capacity all their life. Because they almost never need service, maintenance is negligible. If you would cut battery costs to a minimum, choose Planté.

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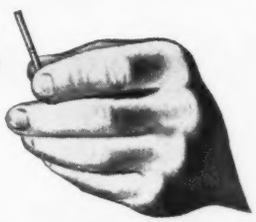
this ***Nicopress*** sleeve →



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this ***Nicopress*** ← 17-2 tool

make better pair splices faster than you've ever made them before!

Pair splices, made the Nicopress way, can't pull out—and they're made in half the usual time!

Built the way Linemen wanted it . . .

CHANCE ONE-TON HOIST

Here's real hoisting power—a one-ton hoist built for line work—with features suggested by linemen across the country.

The Chance One-Ton Hoist is lightweight (only 12 lbs.), has flexible steel load chain that won't kink or bind. Easy to repair in the field with only a screwdriver and pliers. "Free-wheeling" for easy hookup, but safety lock prevents slipping when under strain. Controls may be operated without removing gloves. Permanently lubricated. All working parts are *inside* protective housing.

Made by A. B. Chance Co.

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Association NEWS

"The individual, no matter how strong as an individual, is weak without the strength of his group. And the beauty of American organization is that individuality is stimulated, not suppressed."—Merle Thorpe.

A monthly department featuring condensed reports on activities of Independent Telephone Associations. Abstracts of convention papers will appear in future issues.

Washington-Oregon

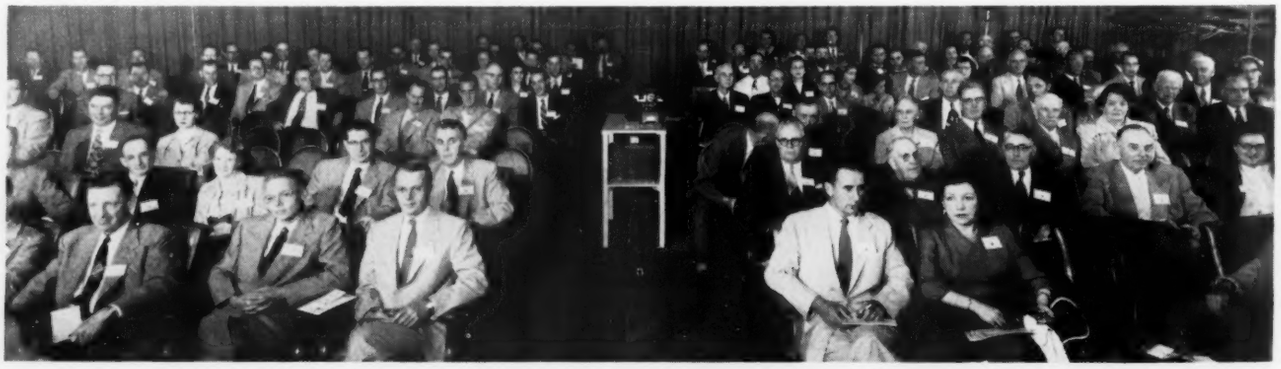
■ PORTLAND, ORE. . . . Nearly 500 representatives of telephone operating and manufacturing companies attended the joint convention of the Oregon and Washington Independent Telephone Associations at the Multnomah Hotel June 18 and 19.

The Oregon association elected John H. Dillard, manager of Nehalem Telephone & Telegraph Co., as its president. Lambert Miller, manager of Sunnyside Telephone Co., was elected vice president. Leslie A. Gritten, West Coast Telephone Co., Everett, Wash., was re-elected secretary-treasurer. Directors elected were M. F. Berglund, De Lake; Lowell Brown, Silverton; John Cavanaugh, La Grande; Lyle Cross, Beaverton; Rodney Cummings, Philomath; Floyd Day, Estacada; Earl Dean, Hood River; Don F. Gibbs, Cave Junction; D. O. Hood, Medford; E. R. Hood, Portland; Donald Kyle, Spray; L. E. Scott, Lebanon; T. J. Wells, Redmond; and H. O. Wiswell, Haines.

The Washington association elected L. M. Curry, manager of Yelm Telephone Co., as its president. W. R. Jarmon, president of General Telephone Co. of the Northwest, was elected vice president. J. W. Baker of Coeur d'Alene, Idaho, was re-elected secretary-treasurer. Trustees elected were W. F. Barnett, Vashon; Lee Bolles, McCleary; Don Childers, Sunnyside; L. M. Curry, Yelm; Ray Dalton, Everett; Hugo Finholm, Gig Harbor; B. L. Gaines, North Bend; A. R. Gately, Orting; Maurice Hull, Forks; W. R. Jarmon, Spokane; W. C. Mumaw, Aberdeen; Wm. G. Pot-

Speakers table at opening session of Oregon-Washington convention. Left to Right are: Rev. MYRON COLE, Portland; FRED PETERSON, mayor of Portland; D. O. HOOD, Medford, Ore.; JOHN H. DILLARD, newly-elected president of hte Oregon Association; and WARREN B. CLAY, U-S-I-T-A president.

Members of this Oregon-Washington convention group are (l. to r.): A. J. ZIMMERMAN, executive director of the Washington association, and MRS. ZIMMERMAN; T. J. WELLS, 1953-54 president of the Oregon association; and W. R. JARMON, president of the General Telephone Co. of the Northwest.



Scene at opening session of joint convention of the Oregon-Washington Independent Telephone Associations.

tratz, Cowiche; J. R. Reynolds, Naches; R. E. Rudolph, Ellensburg; and G. J. Stover, Mount Vernon. A. J. Zimmerman, Seattle, was re-elected Executive Director.

Resolutions were passed by both associations:

(1) Calling for inclusion in REA contracts of adequate provision for compensation to telephone companies for any expense incurred in relocation or metallicization of telephone lines made necessary by power line operations;

(2) Calling for study and revision designed to give relief to public utilities for costs incurred as a result of public authority requiring the moving of their facilities on public rights-of-way when roadways are widened or relocated;

(3) Calling for legal regulation, by the regulatory body of the state in which they are located, of all operating telephone units either privately owned companies, cooperatives, mutuals or non-profit, to the end that uniformly good and acceptable standards of construction should apply to every operating telephone concern alike;

(4) Calling for the complete elimination of excise taxes in regard to the telephone industry or, alternatively, such action as will distribute the financial burden equitably upon other utilities which are not now required to pay an excise tax;

(5) Protesting the interference with telephone communications caused by direct radiation from the U. S. Naval radio station transmitter NLK located near Arlington, Washington, and calling for a policy which would adequately compensate those whose operations are adversely affected by the construction of such powerful installations;

(6) Expressing appreciation for the excellent work performed by the USITA Toll Compensation and Settlements Committee and the executive officers of the USITA and urging continuation of the studies and work that has been started to further improve settlements on interchanged toll traffic with Independent companies; also calling for more equitable and simplified separations procedures.

The Washington Association also passed a resolution opposing any disposition of public property, particularly with reference to the telephone property at Richland, Wash., now owned by the Federal government in disregard of existing rights of an Independent telephone company ready and able to acquire and oper-

Please turn to page 72

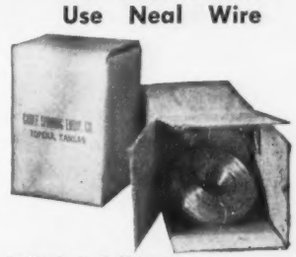
Left to right at Oregon-Washington convention banquet are: W. R. JARMON and MRS. JARMON: DON CHILDERS, 1953-54 president of the Washington association and MRS. CHILDERS.

Put the "B" on Your Problems

The Neale Model B is designed for one-man operation. It may be used with equal effectiveness for spinning new cable or maintenance spinning of existing cable. This machine is easy to transfer at pole . . . simply by removing the gate in the spinner head. Many telephone companies . . . large and small . . . have reported success in using this cable spinner to reduce outside plant costs and solve problems of new construction and maintenance.

See Your Jobber

For Best Results Use Neal Wire



Available in 7 different types . . . all made to meet the toughest construction and corrosion problems.

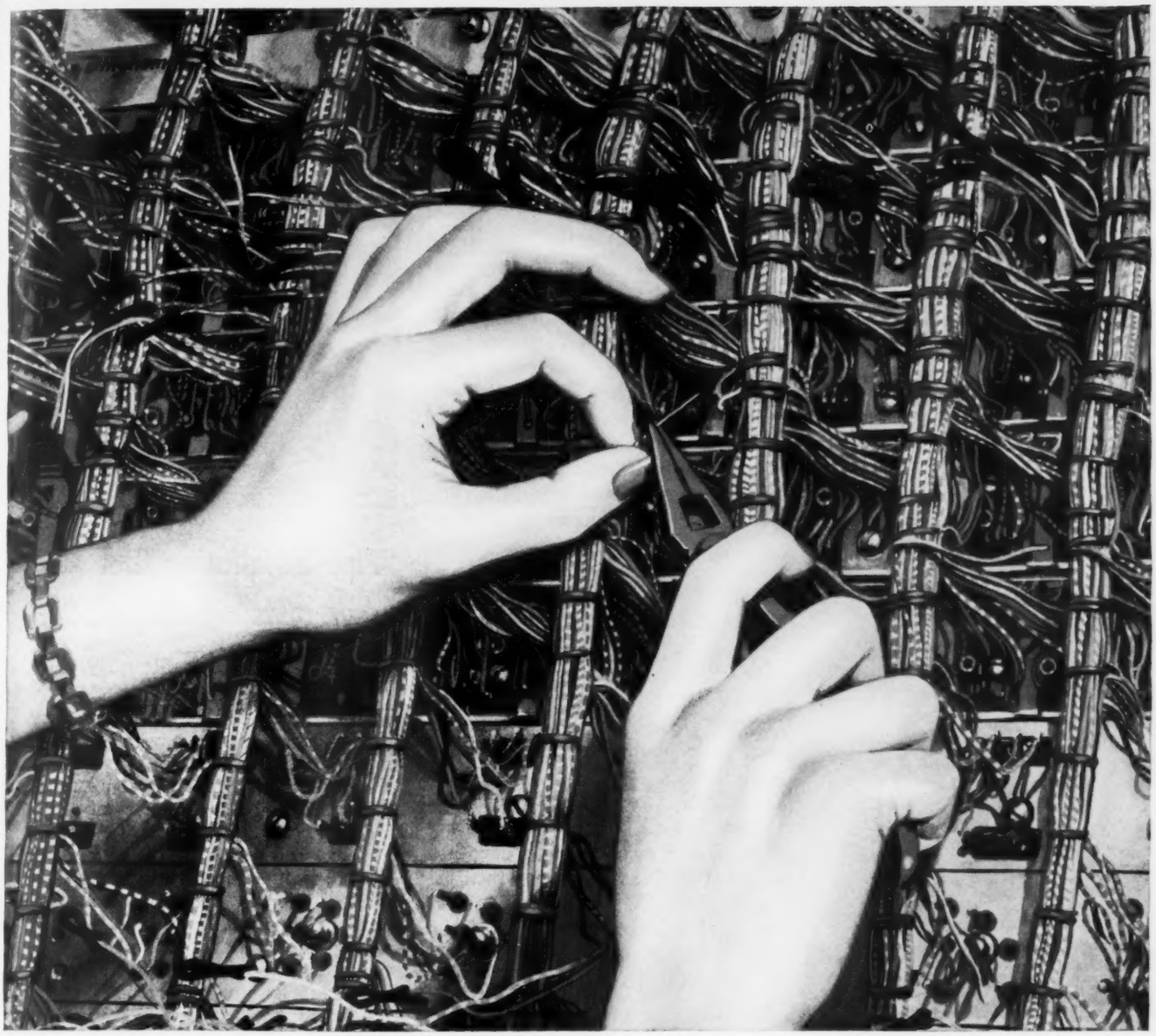
CABLE SPINNING

Equipment Company PHONE 2-7234

3100 TOPEKA AVE. TOPEKA, KANSAS

"I just never thought of my telephone that way..."

The fact is most people aren't aware of the size of the telephone job. So, from time to time we run advertisements like the one across the page in national magazines. Our purpose is to give the public a behind-the-scenes glimpse of what goes on at Western Electric. By telling our own story, we feel that we are contributing to public understanding of the telephone industry and its problems.



Hands that help you say "HELLO!"

These are the hands of a girl at Western Electric, wiring switching equipment that goes to work in your Bell telephone central office when you make a call.

This equipment will take its place in the biggest, most complex machine in the world—the nation-wide network of the Bell Telephone System. Making the parts for this ever-changing, ever-growing machine—telephones, switchboards, wires, cables—has been Western Electric's job for over 70 years.

New or old, these parts must all work perfectly together. And they do—for a good reason.

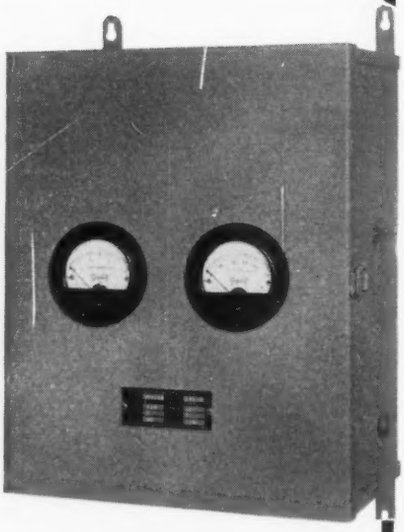
It's this: Western Electric—as the *manufacturing* unit of the Bell System—works in closest touch with Bell Laboratories people who *design* the equipment and Bell telephone company people who *operate* it. We're all part of the same outfit—the Bell System. Together we help you say, "Hello!"—to almost anyone, anywhere.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

Dependable Power

for Years-
and Years-
and Years-
of Service!



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ELECTROX
BATTERY ELIMINATORS
BATTERY CHARGERS

In sizes and capacities to meet every telephone power requirement.

See your Schauer Jobber.
Write for Bulletin 1465.

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SCHAUER
MANUFACTURING CORP.

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ate the telephone facilities.

Speakers at the convention were: T. J. Wells, Redmond, Ore.; U-S-I-T-A President Warren B. Clay, Hutchinson, Minn.; Peter M. Ferguson, Jr., Mankato, Minn.; D. O. Hood, Medford, Ore.; Ray W. Smith, Chicago; REA Administrator Ancher Nelsen, Washington, D. C.; and Joseph F. Leopold.

After the separate business meetings of the two associations, there was a Plant-Traffic Forum, conducted by L. Gray Beck, chief engineer of the West Coast Telephone Co., and an Accounting-Commercial Forum, conducted by Lowell Brown, manager of the Interurban Telephone Co.

At the Plant-Traffic Forum, Mr. Beck presented motion pictures depicting recent developments in line trucks, cable-reel trailers, also new ideas in central office building construction, microwave layouts, etc. Walter Boro, general traffic superintendent of General Telephone Co. of the Northwest, discussed traffic methods. P. M. Ferguson, Mankato (Minn.) Telephone Co., answered a number of questions in regard to plastic cable.

At the Accounting-Commercial Forum, Lowell Brown presided over a general discussion of accounting methods and commercial practices. He was assisted by J. L. Kennedy, Robert Unruh and F. Mehl of the staff of the Oregon Public Utilities Commission.

California

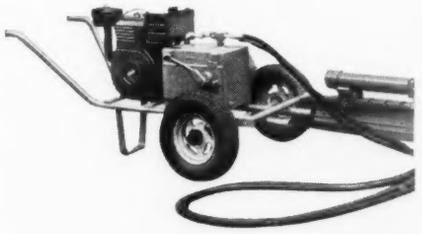
■ San Francisco . . . . Approximately 600 persons, representing most of the 59 Independent telephone companies in California attended the 59th annual convention of the California Independent Telephone Association, June 10-11 at the Fairmont Hotel.

During the two-day meeting, C. F. Mason, chairman of the board of General Telephone Co. of Calif., retired after 20 consecutive years as president of the California association. Willard G. Wade, executive vice president of California Interstate Telephone Co., Bishop, was elected president to succeed Mr. Mason.

New vice presidents of the California group are: Richard D. Crowe, manager of the Dos Palos Telephone Co. and Fred H. Mac Gougan, di-

"Pipe installation time and labor costs cut about 50% with Greenlee Pipe Pusher"

That's what a leading eastern utility reports as its experience with a Greenlee Pipe Pusher on jobs as shown above. Let this remarkable tool make big timesavings and reduce job costs for you, too. With the Greenlee Pusher, *one* man pushes pipe *under* streets, walks, floors, railways, lawns, etc. Eliminates extensive trenching and time-consuming tearing up, tunneling, backfilling, repaving. Often pays for itself on the first few jobs. Two models: No. 790 for pushing ¾" to 4" pipe; No. 795 for larger pipe and concrete ducts.



POWER PUMP for all models of Greenlee Pipe Pushers. Makes the toughest pushing jobs simple, fast for *one man*. Average pushing performance: two feet per minute. Write today for complete details on timesaving Greenlee Hydraulic Pipe Pushers.

TOOLS FOR CRAFTSMEN
GREENLEE

GREENLEE TOOL CO., Division of GREENLEE BROS. & CO.
2008 Columbia Ave., Rockford, Illinois

USITA President WARREN B. CLAY (right) congratulates WILLARD G. WADE on his election as president of the California Independent Telephone Association.

vision manager of California Water & Telephone Co., Monrovia. Frank V. Rhodes was re-elected secretary-treasurer. New directors are J. P. Maguire and Donald H. Strahl. Other directors are Mr. Mason, Fred H. Mac Gougan, Richard D. Crowe, Willard G. Wade and J. Curtis Newman.

As chairman of the resolutions committee, Edwin M. Blakeslee presented a resolution expressing appreciation for the many accomplishments of Mr. Mason during his 20 years as president of the association. Beautifully lettered on a parchment scroll, the resolution later was presented to Mr. Mason.

The afternoon sessions of the first day were devoted to four panel discussion groups dealing with commercial, traffic, plant and revenue accounting operations and methods.

Discussing commercial operations, Hal O. Davis of the Los Gatos Tele-

Discussing California Convention are (l. to r.): FRANK FREELAND of Hawaiian Telephone; HAROLD E. THROP and REID GARDNER of California Interstate Tel.; and D. H. MILLER of Pacific Tel. & Tel.

Give the GUY a CHANCE
Build lines to stay with the
CHANCE 8 Way
MIKE THE MOLE SAYS:
Only a mole can tell what goes on below "see" level!
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Here's a typical example of a test result . . . This 200 square inch Chance 8-Way was pulled to nearly double its rated load without damage to the anchor.

MIKE'S RIGHT! You can't tell what happens to an anchor after it's installed unless it fails—or is pulled out in a test or dug out for examination. Chance has pull-tested all kinds of anchors all over the country to see what happens when anchors are subjected to heavy loads. These tests prove that the Chance 8-Way holds far more than its rated load because the eight blades expand to form a complete pyramid shaped square—there is no wasted space between blades. The guy load is equally distributed all around the hole.

* * *

8-Ways are available in a range of sizes for every requirement from guying rural phone lines to guying heavy transmission lines. Your CHANCE Anchor Distributor can probably supply you directly from stock. SPECIFY CHANCE FOR SERVICE!

A·B·CHANCE CO·

CENTRALIA, MISSOURI

SAN FRANCISCO, CALIFORNIA

ABC INDUSTRIES

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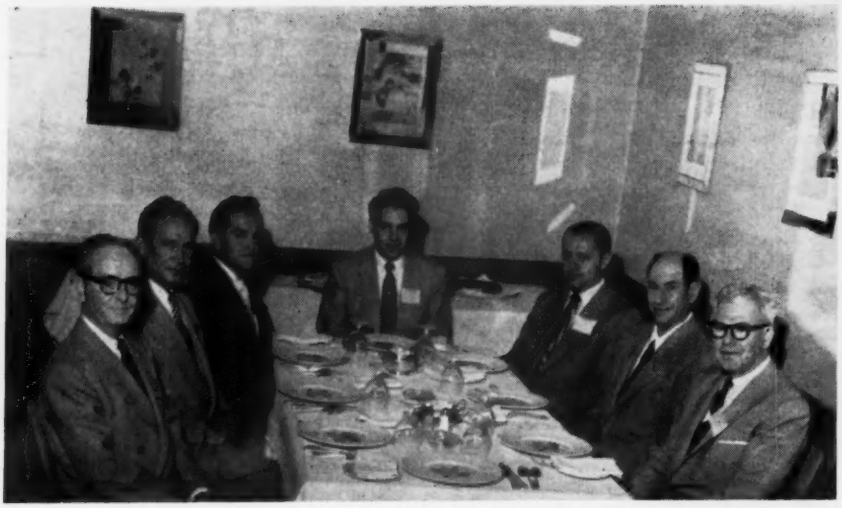


Directors of California Independent Telephone Association (l. to r.): F. RHODES, DONALD H. STRAHL, J. P. MACGUIRE, W. C. WADE, R. D. CROWE, J. C. NEWMAN ,and F. H. MAC GOUGHAN

phone Co. was assisted by R. C. Ferber of California Interstate Telephone Co., C. D. Hutton of Pacific Telephone & Telegraph Co., R. M. Crockett of Citizens Utilities Co. and Paul F. Sercu of General of California.

Owen G. Jarboe of General of California led the traffic round table. Others participating were Mrs. Ann Peterson of Gilroy Telephone Co., L. A. Dudley of California Water & Telephone Co., R. L. Edmonds of the Pacific Bell, and Mrs. Naomi Loux, California Pacific Utilities Co.

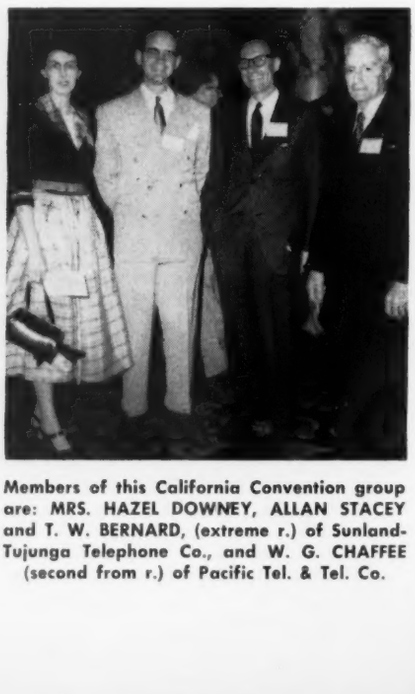
Leader of the plant methods and records forum was Donald H. Strahl of Gilroy Telephone Co., with M. H. Alexander of Kern Mutual, O. E. Emley of Sunland-Tujunga, E. J. Morrison of California Interstate, W. Gilman Snyder of Western Telephone, and Jack Williams of California Water & Telephone.

The revenue accounting forum was led by J. P. Maguire of Kern Mutual, assisted by H. C. Corke of the Pacific Bell, Richard Crowe of Dos Palos, J. Curtis Newman of Coachella Valley Home, and Allen R. Stacey of Sunland-Tujunga.

Speakers at the convention sessions included: Honorable Preston Hotchkis, United States Representative to the United Nations; Honorable Verne Scoggins, member of the California Public Utilities Commission; Warren B. Clay, Hutchinson, Minn., president of the United States Independent Telephone Association; Ben S. Gilmer, vice president of the Pacific Tel. & Tel. Co.

Committee reports were presented by E. M. Blakeslee; Willard G. Wade; A. R. Stacey, and D. O. Hood.

Members of this California Convention group are (l. to r.): R. J. HADDEN of Pacific Tel. & Tel.; FRANK DAVIES of General Telephone Directory Co.; and LESLIE H. WARNER of Leich Electric.



Members of this California Convention group are: MRS. HAZEL DOWNEY, ALLAN STACEY and T. W. BERNARD, (extreme r.) of Sunland-Tujunga Telephone Co., and W. G. CHAFFEE (second from r.) of Pacific Tel. & Tel. Co.

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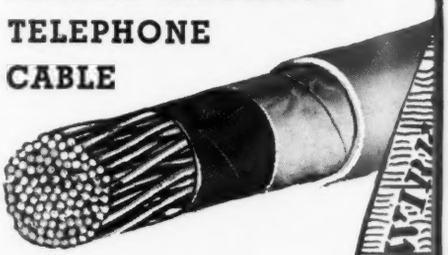

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Available for aerial, duct and direct burial — paired, quadded and composite constructions. Use Ankoseal on your next job. Get full details from your nearest Stromberg-Carlson Branch Office.

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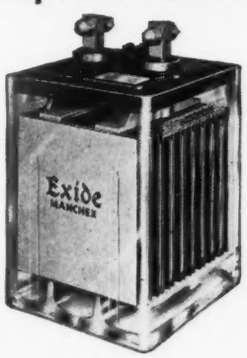
battery eliminator and 20-cycle ringer all in one—

RAYTHEON RectiRingeR*

Compact, indeed—only 7⅜ x 12¾ x 6 inches. Combines time-proven Recti-FilteR, to supply humless, regulated DC power, with 20-cycle ringing power. No moving parts to wear out—economical, silent, easy to install. And a special relay *instantly* brings in "stand-by" power in the event of AC failure.

Made by RAYTHEON MANUFACTURING CO. *Reg. U.S. Pat. Off.

Exide-Manchex telephone batteries



assure positive operation

For Central Office and Private Branch Exchange Equipment

This is proven daily in exchanges of every size ... for over 60 years Exide Batteries have been serving the Telephone Industry . . . the Manchester positive plate with its exclusive button type construction provides exceptionally long life . . . latest developments on molded glass jars permit compact space saving installation . . . heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates . . . microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions . . . plastic spacers assure plate alignment . . . for assured dependability, long life and low-cost maintenance use Exide Manchex.

The Electric Storage Battery Co.
Philadelphia, Pa.

1888 . . . Dependable Batteries for 66 Years . . . 1954

reliable zinc cable hangers

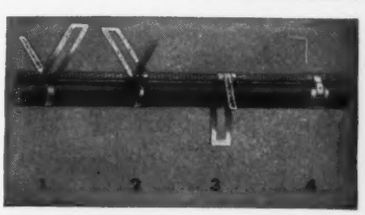
INSURE NO SHEATH CUTTING

NO CREEPING

NO RUSTING

Even badly worn cables hung with Reliable Zinc Cable Hangers will last much longer. The reason is merely that all cable movement that results in wear and sheath cutting is eliminated, because the cable is rigidly bound to the messenger. This is also an added lightning protection—a solid ground is established between messenger and cable.

Reliable Zinc Cable Hangers are strong, economical, and easy to install.



The four simple steps above clearly illustrate the simplicity of a Reliable Zinc Cable installation.

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Suppliers' NEWS Briefs

A monthly department featuring condensed reports on activities of the manufacturers and suppliers serving the Independent Telephone Industry.

Telephone industry manufacturers and suppliers are invited to send in news releases for use in this department.

Kellogg Names Clark To Head Western Div.

APPOINTMENT of A. N. Clark as Western division manager for Kellogg Switchboard & Supply Co., with headquarters in Kansas City, Mo., has been announced by O. C. Bailey, assistant sales manager for the company. Clark, who has been associated with the Kellogg organization since 1951, moves to his new post from Portland, Ore., where he has been Kellogg district manager. Prior to his Portland assignment he served as a Kellogg field representative in Wisconsin. He joined the company as Senior Engineer for Manual Switchboards following 16 years of extensive engineering experience with Interstate Telegraph Co. and Pacific Telephone & Telegraph Co. An alumnus of McKinley-Roosevelt Foundation, University of California and LaSalle Extension University, he has a Bachelor's Degree in Electrical Engineering.

A. N. Clark

Holland Joins Stromberg-Carlson

JOHN J. HOLLAND, formerly electronic equipment contracting officer for the U.S. Army Signal Corps at Fort Monmouth, N. J., has joined Stromberg-Carlson Company as head of quality control and inspection for the company's radio-television division. His duties will encompass both commercial and military production.

Mr. Holland's background is in the field of electronics engineering. His engineering studies at Villanova Univerity were interrupted by active duty with Signal Corps from 1941 to 1946, which he finished as a captain, the rank he still holds in the U. S. Reserves. Following his graduation from Villanova in 1951, he was recalled to active duty with the Signal Corps Supply Agency in Philadelphia, headquarters for all procurement for that branch.

After a year there, he went to Fort Monmouth and spent two years as contracting officer previous to coming to Stromberg-Carlson in Rochester.

David S. Cook Named To New Position

DAVID S. COOK is the new advertising manager of the radio-television division of Stromberg-Carlson Co., Rochester, N. Y., according to an announcement made by C. J. Hunt, general manager of the company's radio-television division. Mr. Cook has been sales promotion manager since 1946, and takes the position formerly held by S. H. Manson, newly appointed director of public relations for the firm. Mr. Cook first came to Stromberg-Carlson in 1943 as editor of the company's employe publication, the "Speaker."

David S. Cook

Mr. Cook's previous business connection was with Collins Management, speaker and concert bureau with headquarters in Rochester, for 17 years. Immediately following his graduation from Cornell University in 1924, he spent two years as an instructor and news service coordinator for the New York State College of Agriculture at Cornell.

General Cable Names Barnes To New Post

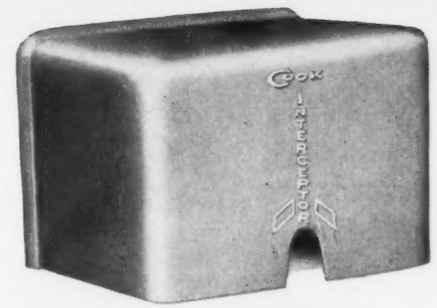
ARTHUR Z. BARNES, Southwestern District sales manager of the General Cable Corp., has been elected assistant to J. R. MacDonald, president of General Cable. Mr. Barnes will have his headquarters in Dallas, Texas, and will also be responsible for district sales offices in St. Louis, Kansas City, Memphis and New Orleans. He first joined General Cable in 1929 as Dallas district sales manager. His entire career has been closely associated with electrical power, transmission and distribution for utilities, the construction industry, the railroads, the communication industry and many other prominent users of electrical wire and cable.

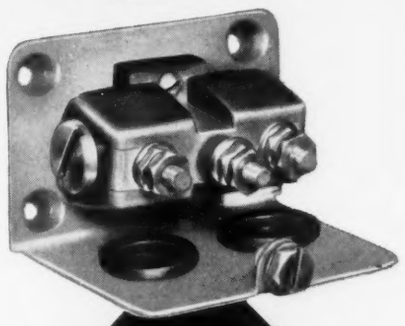
A. Z. Barnes

Kellogg Appoints Langston Portland District Manager

L. B. LANGSTON has been named district manager for the Kellogg Switchboard & Supply Co. in Portland, Ore., according to an announcement by O. C. Bailey, assistant sales manager. Langston, who has been active in the telephone field since 1921, moves to his new assignment from a Kellogg post in Kansas City, Mo. He has been associated with Kellogg for 27 years, serving with the switchboard sales department in Chicago, and as district manager in St. Paul, Minn., in addi-

L. B. Langston





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PROTECTION
with the new self clearing
MINIGAP
cartridge type arresters

The new Interceptor is designed for static drain, lightning and power surge protection.

Sealed MINIGAPS are screw mounted in bakelite with ground stud and bussed circuits insert moulded. The protector unit is enclosed in all metal corrosive resistant housing with grometted bracket.

Intercepter Part No. 501-150
Minigap Part No. 41-350

COOK ELECTRIC Company

2700 Southport Avenue
Chicago 14, Illinois

tion to his Kansas City experience. Before joining the Kellogg organization he was for six years central office maintenance and wire chief for the Missouri Telephone Co., Clinton, Mo.

Hoit Elected Vice Pres. of Management Assoc.

GORDON G. HOIT, of Rochester, N. Y., was elected vice-president of the finance division of the American Management Association at the group's annual meeting in New York on June 22. Mr. Hoit is a director and executive vice-president of Stromberg-Carlson Company.

Gordon C. Hoit

A member of the association for the past ten years, Mr. Hoit spent one year as a member of the Financial Council of the organization. He recently conducted the first financial seminar on the West Coast under the auspices of the management group.

Mr. Hoit is also a member and past president of the National Association of Cost Accountants and a member of the Controllers Institute of America.

Stromberg-Carlson Names Sales Manager

JOSEPH S. OTTALAGANA has been appointed manager of the Rochester, N. Y., telephone sales office of the Stromberg-Carlson Co., covering the Northeastern United States, according to T. C. Thompson, telephone sales manager.

Donald C. MacMillan, whom Mr. Ottalagana succeeds, will become assistant national sales engineer and REA (Rural Electrification Authority) specialist, Mr. Thompson said.

Other appointments announced at the same time are those of John E. Cornelius, Rochester sales engineer, as microwave and carrier specialist in the national sales engineering group, and of Howard E. Phelps as sales engineer in the Rochester sales group. Mr. Phelps formerly was with the Stromberg-Carlson Credit Corp.

These organizational changes within the telephone sales department are part of a long range plan of expansion, meeting the need for specialists

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- RECEIVER CORDS
- TRANSMITTER CORDS
- PATCH CORDS

with tough, long-wearing NYLON, NEOPRENE or MERCERIZED COTTON JACKETS.

2
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Extra Length Cords
Retractable Handset Cords
Test Cords and
Special Cords for
Inter-Communication Systems

3
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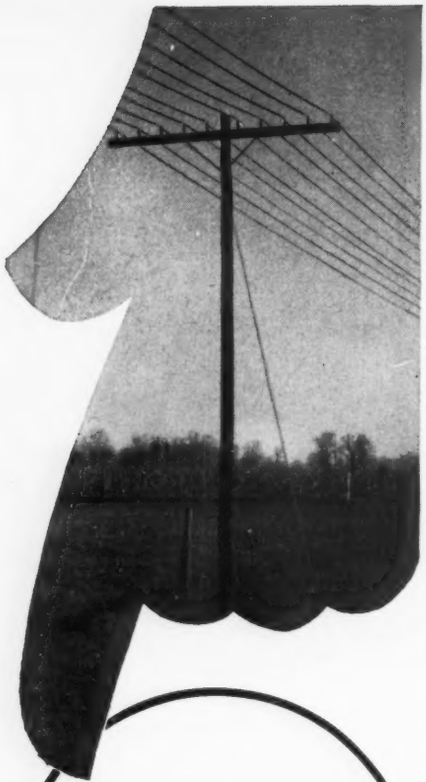

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Muncie, Indiana

Supplier's News Briefs

(Continued from page 77)

in the field of microwave and carriers, and also are made in anticipation of future retirements, Mr. Thompson explained.

Mr. Ottalagana joined the drafting department of the Stromberg-Carlson Company in 1936, and has worked his way up through switchboard engineering. In 1944 he spent a year in the production design laboratory, and followed that with a year as engineer in charge of telephone system development. In 1946 he joined the national sales engineering group, where he has most recently been a specialist on REA telephone engineering. Mr. Ottalagana is an electrical engineering graduate of Clarkson Institute of Technology, in the class of 1934.

J. S. Ottalagana

Mr. MacMillan joined the Stromberg-Carlson Company in 1923 after studying engineering at the University of Rochester. After spending several years in the drafting and engineering departments, he was transferred to sales engineering in 1937, and in 1950 was appointed manager of the Rochester sales office. In his new position he becomes assistant chief sales engineer, and is responsible for the company's REA sales program. He resides at 92 Belcoda Drive.

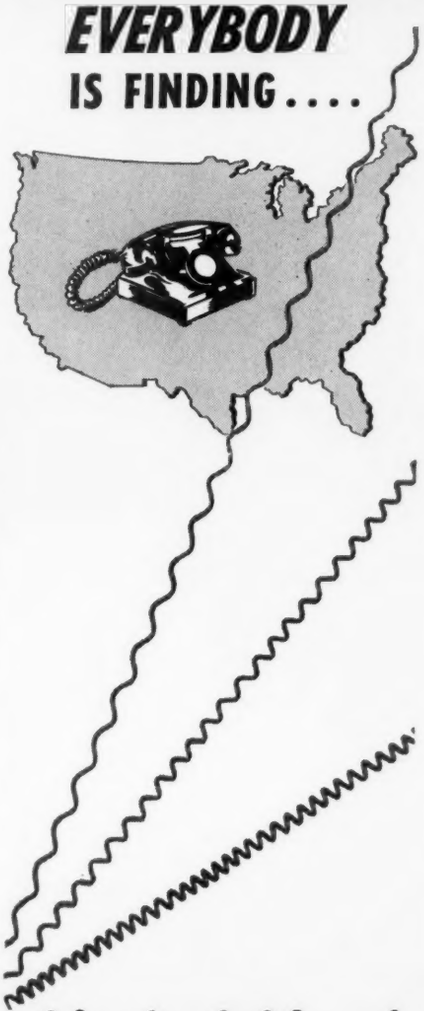
D. C. MacMillan

Mr. Cornelius majored in business administration at LaSalle University, and joined the company in 1940. Starting in the installation department, he has moved up through the organization in engineering and most recently as sales engineer in the Rochester group. He lives at 46 Copeland Street.

J. E. Cornelius

Mr. Phleps attended both the Rochester Institute of Technology and

ACROSS THE NATION
EVERYBODY
IS FINDING....



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BETTER FOR THE TELEPHONE COMPANY

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On all new telephones, be sure to specify KOILED KORDS retractile telephone cords, and also use them for replacements as needed. Available from your independent telephone supplier to fit all telephones.

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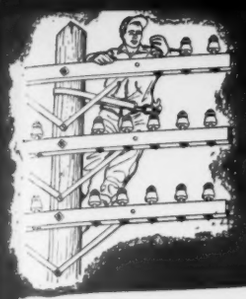

LINE CONSTRUCTION BLUEPRINTS

ITEMS SOME COMPANIES ARE USING TO MAKE
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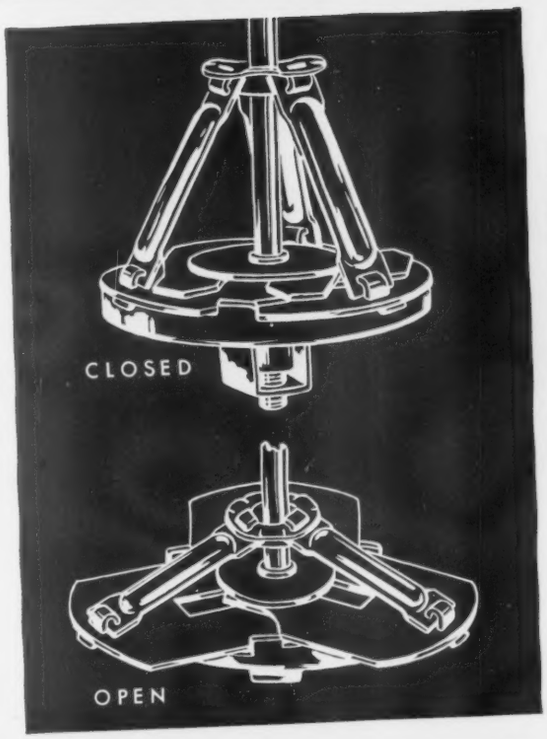


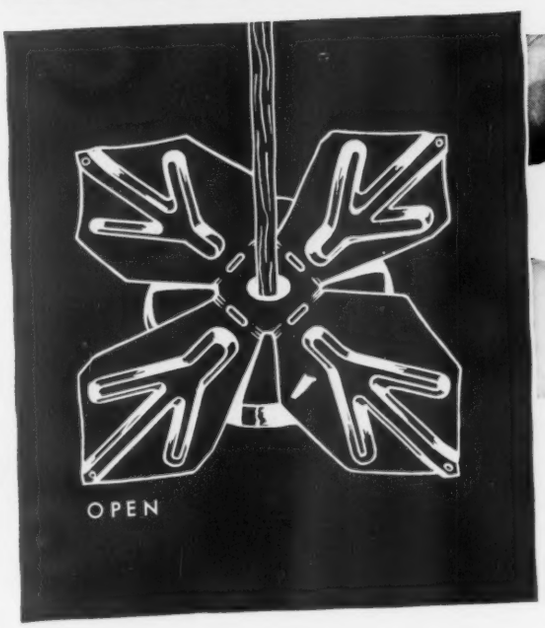
L-M SLIDING PLATE ANCHORS

now up to 20,000 pounds holding power

L-M sliding plate expanding anchors are heavily built, for smooth operation, easy installation, and tremendous strength. As the tamping block strikes the collar, the strong spreader arms give the steel blades a sliding action that cuts into undisturbed surrounding soil quickly and easily. Under tension the spreader arms act as trusses for the blades. These anchors are available in sizes listed below.

Available in 4 sizes

Catalog Number	Nominal Holding Power Pounds	Expanded Area Sq. In.	Type	Diameter Closed Inches	Approx. Net Wt. Lbs. per 100
200015E6	6,000	94	2-Way	8	850
200015E8	8,000	115	3-Way	8	1100
200015E10	10,000	135	4-Way	8	1350
200029B1	20,000	200	4-Way	10	2450



L-M 4-WAY PRESSED STEEL EXPANDING ANCHORS

HIGH strength, MINIMUM creep

Two-piece design . . . the four blades are formed of a single piece of sturdy steel. The center hole is extruded downwards, which provides a bearing surface against the rod to prevent binding, reinforces the tamping area, and provides an audible signal when the extrusion strikes the base, indicating full expansion.

Catalog Number	Nominal Holding Power Pounds	Expanded Area Sq. In.	Diameter—Closed Inches	Anchor Rod Diameter Inches	Minimum Mechanical Strengths Without Noticeable Deformation—Pounds
200026B1	6,000	110	8	⅝,¾	16,000
200026B2	8,000	125	8	⅝,¾	21,000
200026B3	10,000	132	8	1	24,000
200026B4	10,000	132	8	⅝,¾	24,000

189-R

Do You Have a Line Construction Problem?

These are just a few of thousands of L-M line construction specialties. If you have a line construction problem, let us know. We may have standard or special items in stock that will solve it. Ask the North Electric or Kellogg representative or the L-M Field Engineer. Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division.)

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the University of Rochester, specializing in electrical engineering. He joined the company in 1948 as a sales engineer in the subsidiary Stromberg-Carlson Credit Corporation, organized to assist independent telephone companies in obtaining loans for new equipment. He now joins the Rochester telephone sales group as sales engineer. He lives at 224 Warwick Avenue.

H. E. Phelps

Mr. Thompson also indicated that additional changes in the national telephone sales organization will be announced later. They are part of a long range program of expansion in new fields in telephony, and are in keeping with the company's retirement policies, he said.

Stromberg-Carlson Names Manson To New Post

STANLEY H. MANSON has been appointed to the newly-created position Director of Public Relations of the Stromberg-Carlson Co., Rochester, N. Y., it was announced recently by Robert C. Tait, president. Mr. Manson has been serving as Manager of Advertising and Public Relations for the Radio-Television Division. He joined the Stromberg-Carlson Co. in July 1927 following his graduation from Dartmouth College. His career at Stromberg-Carlson has been exceptionally broad, providing a complete background for his new position which embraces the entire scope of company operations. He began as a switchboard installer, was in the radio assembly, inspection, and engineering departments for several years, was appointed manager of the company's Atlanta branch in 1931, served as sales manager of a chain of eight music stores in Florida, and radio sales manager at the Rochester Gas & Electric in 1932 and '33 before he returned to Stromberg-Carlson as up-state New York district merchandiser for a 7-year period. In 1940 he was transferred to the company's Kansas City office as radio sales manager returning to Rochester prior to World War II as national sales promotion manager and later national advertising manager.

S. H. Manson

Dyson & Associates Purchase Hubbard & Co.

CHARLES DYSON and associates announced the purchase last month of all the outstanding stock of Hubbard & Co., Pittsburgh, Pa. This 111-year old company is a leading producer of pole line hardware, aluminum street lighting standards and brackets for public utilities, and railroad track tools and track accessories. Electrical materials plants of the company are located in Pittsburgh, Pa., Chicago, Ill., and Oakland, Calif. The company also is the parent concern for Sand's Level & Tool Co., Clinton, Ind.; Hubbard Aluminum Products Co., Pittsburgh, Pa.; Beall Tool Division, East Alton Ill., and Unit Rail Anchor Co., Chicago, Ill. Hubbard & Co. will continue to be independently operated.

Mr. Dyson stated that James H. Knowles, president of Hubbard, will continue in that capacity and become

Please Turn to Page 86

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ADVERTISING, Directories — General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 1800 Busse Highway, Des Plaines, Ill.—[ADV. 2]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.—[ADV. 3]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18, Ill.—[ADV. 4]

BOOTHS—Acoustic Telephone — Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.—[ADV. 5]

BRUSH & WEED KILLERS — Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.—[ADV. 6]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard. — The Ansonia Wire & Cable Co., Ansonia, Conn.—[ADV. 7]

CLIP — Modern Lineman's Needle Clip. Free catalog #AA588 and free samples from: Mueller Electric Co., 1588AA E. 31st St., Cleveland 14, Ohio. [ADV. 8]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.—[ADV. 9]

CORDS, Switchboard & Telephone — Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.—[ADV. 10]

ELECTRIC HOT WATER HEATERS. Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.—[ADV. 11]

FURNACES — For quickly and economically melting lead and paraffin — Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.—[ADV. 12]

INSULATORS, Porcelain — Porcelain Products Inc., Box 300, Findlay, Ohio.—[ADV. 13]

LIGHTWEIGHT PULLERS — Coffing Hoist Company, 800 Walters St., Danville 5, Ill.—[ADV. 14]

PIPE PUSHERS — Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.—[ADV. 15]

POLE HOLE DIGGERS — For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.—[ADV. 16]

POLES, Southern Yellow Pine — Colfax Lumber & Creosoting Co., Inc., P. O. Box 23, Pineville, La.—[ADV. 17]

POLES, Southern Yellow Pine — Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.— [ADV. 18]

POLES, Southern Yellow Pine — Texas Creosoting Co., Orange, Texas.—[ADV. 19]

PROTECTIVE EQUIPMENT — Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.—[ADV. 20]

REBUILT TELEPHONE & SWITCHBOARDS — Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.—[ADV. 21]

TRUCK BODIES — Highway Trailer Co., Edgerton, Wisc.—[ADV. 22]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — Alphaduct Wire & Cable Co., Milltown, N. J.—[ADV. 23]

WIRE, Insulated Drop and Bronze or Copperweld — Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.—[ADV. 24]

WIRE, Telephone, for all inside and outside uses — Whitney Blake Co., New Haven, Conn.—[ADV. 25]

NEW PRODUCTS' SHOWCASE

"DEKABOX":—Electro - Measurements, Inc., 4312 S. E. Stark St., Portland 15, Ore., has introduced a versatile new A.C. decade box providing more than a million 1 ohm resistance steps from zero to 1,199,999 ohms. The assembly, called a DEKABOX, is mounted on a compact adjustable mounting base. This may be set to the most convenient angle for reading the six decade dials which display the value of resistance in a single horizontal line.

All resistors are precision wire wound units adjusted to within ±0.05% of their rated value and have special windings to minimize frequency error. The temperature coefficient of individual resistors is less than ±0.002% per degree Centigrade. All switch contacts are solid silver for minimum contact resistance and all switch plates are made of ceramic material specially treated for maximum insulation resistance. A circuit diagram and all resistance and rated current values appear on the front panel with the laboratory type binding posts.

For catalog sheets giving complete specifications and the location of your nearest engineering representative, Check New Product 647

SENSITIVE RELAY: — A new sensitive relay designed primarily for use in electronic chassis which have sufficient height but little adjacent space is announced by Hedin Tele-Technical Corp., Livingston, New Jersey. It also has a wide range of applications which include atomic instrumentation, transistors, germanium diodes, and telephone operations.

The new relay provides a hermetically sealed double-pole, double-throw combination, and has a capacity up to 3 amp. inductive load. It is equipped with a standard octal socket. Wattage consumption is 0.1 and less, depending on the contact arrangement, or less than 1 ma., depending on the voltage used.

The new Hedin sensitive relay is made of fine nickel alloys with pure silver contacts. No hinge pins are used in its construction.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Illinois

Please forward complete information on the following products and services described in the August, 1954 issue of TELEPHONE ENGINEER & MANAGEMENT (Check Information desired.)

NP 647 NP 648 NP 649 NP 650

SERVICES AND SUPPLIES

ADV. 1	ADV. 2	ADV. 3	ADV. 4	ADV. 5
ADV. 6	ADV. 7	ADV. 8	ADV. 9	ADV. 10
ADV. 11	ADV. 12	ADV. 13	ADV. 14	ADV. 15
ADV. 16	ADV. 17	ADV. 18	ADV. 19	ADV. 20
ADV. 21	ADV. 22	ADV. 23	ADV. 24	ADV. 25

Name _____ Title _____

Company _____

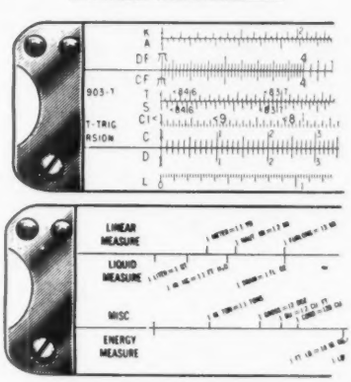
Street Address _____

Town _____ Zone _____ State _____

The armature is free of friction. Coil resistances can be furnished up to 30,000 ohms.

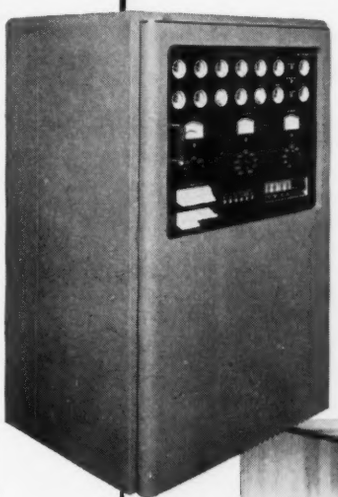
For complete information, Check New Product 648.

BULLETIN BOARDS: — Industrial Products has announced a new line of bulletin boards. The boards are constructed of Philippine mahogany, finished in high gloss lacquer. Style No. 70 is of cabinet type construction, 28" x 35" x 4" inside depth. It features cork posting surface, hinged glass door to protect contents, and is designed to be used singly or may be mounted side by side in any number required. The sign panel is of white opaque pastic and may be furnished with any desired wording. A concealed fluorescent tube provides light through sign panel and over the entire inner area. Flush type boards of the same materials are also available from stock. For complete information, Check New Product 649.

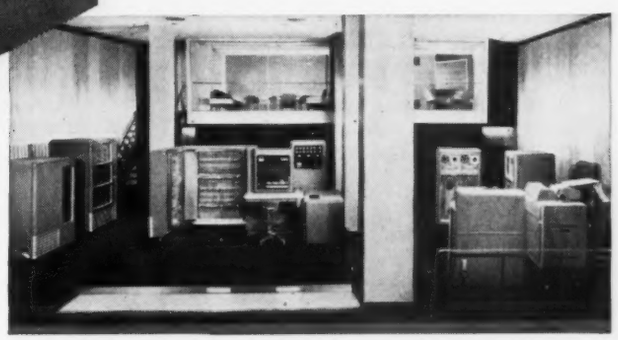


SLIDE RULE:—A new conversion side rule bearing 64 linear, liquid, energy and miscellaneous factors on one side plus a complete Trig Scale arrangement on the reverse side consisting of A, K, DF-CF, T, S, CI, C-D and L scales has been announced by Pickett & Eckel, Inc. By merely "Positioning a Conversion Mark opposite an Index Mark, any conversion is automatically set and read on the C, D, CF or DF scales without moving the slider or further computation. The same automatic Conversion Principle is adaptable to any set of specialized conversion factors on either pocket-size or 10-inch rules for any line of work. The New Model 903-T Single-Setting Conversion Rule is made of light weather-proof metal alloy, is 12-1/8 x 1-1/4 x 3/32 inches in size with white facing, and weighs 2-3/4 ounces.—For Compete Data, check New Product 650.

PECO supplies POWER for IBM's New Electronic Data Processing Machines

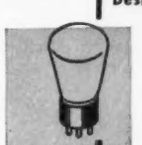


IBM's new "701", designed to assist engineers and scientists working on vital defense projects, is capable of performing an average of 14,000 mathematical operations per second! Compared with previous methods, the new "701" solves involved mathematical problems in an unbelievably shorter time period. Below left, is illustrated the time comparisons of a typical problem.

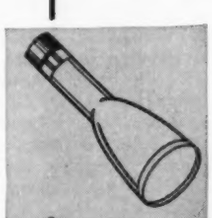


PECO Power Control and Distribution Unit.

7 YEARS
Desk Calculator



7 HOURS
Selective Sequence Electronic Calculator



7 MINUTES
IBM's new "701"

Regulated DC power, as well as regulated filament power, for the IBM "701" is furnished in equipment manufactured by Power Equipment Company. For your computer, or for other applications where accurate regulation and speed of response are required, PECO is qualified to design, develop and manufacture rectifier type power supplies in a wide range of sizes.

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POSITION WANTED

POSITION WANTED:—By man and wife experienced in switchboard work. Husband is not able to work on lines but are both good on the board. Will go anywhere. Mr. Walter Eash, Sr., 719 East B, Hutchinson, Kansas.

POSITION WANTED — Engineer, BSEE, 6 years broad experience in equipment engineering and related fields, desires relocation with operating company offering opportunities for widening of scope and advancement. For resume, write Box 8894, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Illinois.

POSITION WANTED: — Senior technician seeks position affording wider scope for engineering ability. Eight years experience, a working knowledge of all phases of telephone work, specialized in C. O. equipment, I. C. S. training, age 27. Relocation in an eastern state. Box 8898, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

POSITION WANTED—Man with five years telephone work experience desires position in Illinois. Installation and/or maintenance preferred. Write Box 8899, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

Telephone Engineer's Research Bureau reports an expected expenditure of $1¼ billion annually during the coming three years by telephone companies in the United States for new equipment, supplies, new construction, rebuilding, etc.

Many companies will need your services . . . A Professional Card in Fortnightly Telephone Engineer should attract the attention of those near you. Write for details.

HELP WANTED

HELP WANTED:—Position open for man for transmission testing with some knowledge of electronics and carrier work. Write Box 8906, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

A WELL ESTABLISHED COMPANY AND A LEADER IN ITS FIELD HAS POSITIONS OPEN — IN ENGINEERING FOR THE FOLLOWING:

A. Engineers experienced in the design of modern machine switching circuits. Should have ability to think in terms of relay circuitry and do independent design work. A good knowledge of problems involving reliability and common practice in modern telephone systems is essential.

B. Engineers with experience in the design and application of telephone and/or industrial relays. A good working knowledge of materials from both the magnetic and mechanical standpoints is required. Design and application work will stress reliability and long life of components.

Reply in confidence, fully stating details of personal and professional history as well as education. Expense paid interviews will be arranged for those applicants demonstrating suitable qualifications in first letter. Salaries will be liberal and as justified by qualifications. Location: Middlewest. Box #8901, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

WANTED: Central Office Equipment Man for new Stromberg XY exchange in Florida. Would be assistant to present C. O. E. man. State age, education, experience, family status, salary expected. Box 8900, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

TELEPHONE ACCOUNTANT wanted to take full charge of accounting of Class A telephone company in Florida. Here is an opportunity to grow with a new company with a big future ahead of it. Prefer young man with five to ten years telephone accounting experience. Write to Otto Wettstein, III, President, North Florida Telephone Company, Live Oak, Florida

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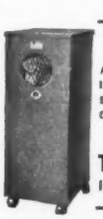

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YOUR PROFESSIONAL CARD IN THIS SPACE
Would be seen by thousands of telephone men every month.

FOR SALE

FOR SALE: — Stromberg-Carlson #3-9 Convenience System. Now in use with 9-(1216) telephones. Redfield Telephone Company, Redfield, Iowa.

AVAILABLE August 1, 1954, for shipment from Pennsylvania: Complete 2,000 line Stromberg-Carlson Super-Service manual office consisting of eighteen (18) positions including main frame, power equipment, harmonic ringing equipment, Wire Chief's Desk and Chief Operator's Desk. Write Box 8902, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

FOR SALE:—Automatic Electric Company Mono Type PBX, 50 lines, 5 trunks to Dial office, 6 cord circuits, and Hand-set, complete and in good condition with a Model RT-unit for ringing and battery supply. Cumberland Telephone Company, Cumberland, Wis.

RECONDITIONED

FEDERAL No. 804A

Magneto Compact set convertible to desk or wall.
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Terms 2%—10 Days Net: 30
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FOR SALE — 900 lines, Stromberg common battery equipment, consisting of 6 positions in 3 position sections, rebuilt like new. Storage battery, charging equipment, Leich dual vibrator harmonic converter. Write R. D. Askins, Telephone Service Co. of Ohio, Lima, Ohio.

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COMPLETE TELEPHONE EXCHANGE EQUIPMENT, CONSISTING OF — —

5 position Stromberg-Carlson central energy multiple switchboard. Each position has 17 universal cord circuits. Multiple wired and equipped with 1060 lines. Wired and equipped with 11 toll circuits. Equipped for up to eight party full selective harmonic machine ringing with Leich harmonic ringing converter with automatic change to standby; including all necessary power equipment and 24 amp Flotrol Charger

Complete new key shelves installed in 1952 when converted to harmonic selective ringing.

Complete mainframe equipped with Cook No. 3800 type protectors.

2 positions of the equipment were installed new in Nov. 1940, 1 position installed new in 1942, and 2 positions installed new in 1950.

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Now in operation, but should be available in October, 1954 account conversion to dial operation.

If interested, contact
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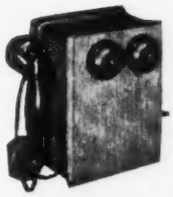
Practically new Peatrophone, cost $500.00 in 1952. Make offer. Write Box 8903, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.



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3 Bar. 1000 Ohm. @ $18.00
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Latest style Signal Corps, Thermoplastic jacket, 2-conductor, twisted pair, (4 copper, 3 steel). Spliced with 3-045B Nicopress Sleeves and sealed with air-tight plastic Sleeves.

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S. C. #350-B Combined Key and Supervisory Drop Assembly (Replaces #169-F Key) *NEW*
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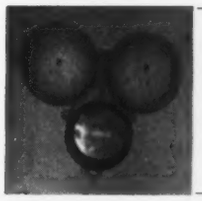

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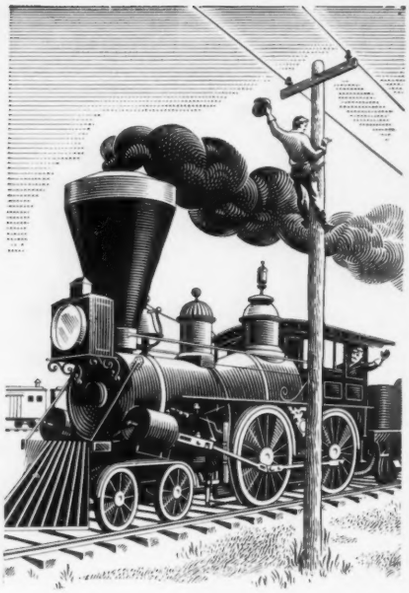

"Faster Freight"

In 1851, Erie Railroad became the first railroad to use telegraphic communications in dispatching trains. This method eliminated many hours of delay at passing points in the single track railroading of that day. Its success led to adoption of the telephone system for dispatching trains now in general railroad practice.

It was in this same era that the first Hemingray Glass insulators were made. Through constant research and development they have kept pace with the communication industries of the world.

There is an insulator design suitable for every communication pole-line requirement. Most jobbers carry complete stocks. Write for a free descriptive catalog. Kimble Glass Company, subsidiary of Owens-Illinois

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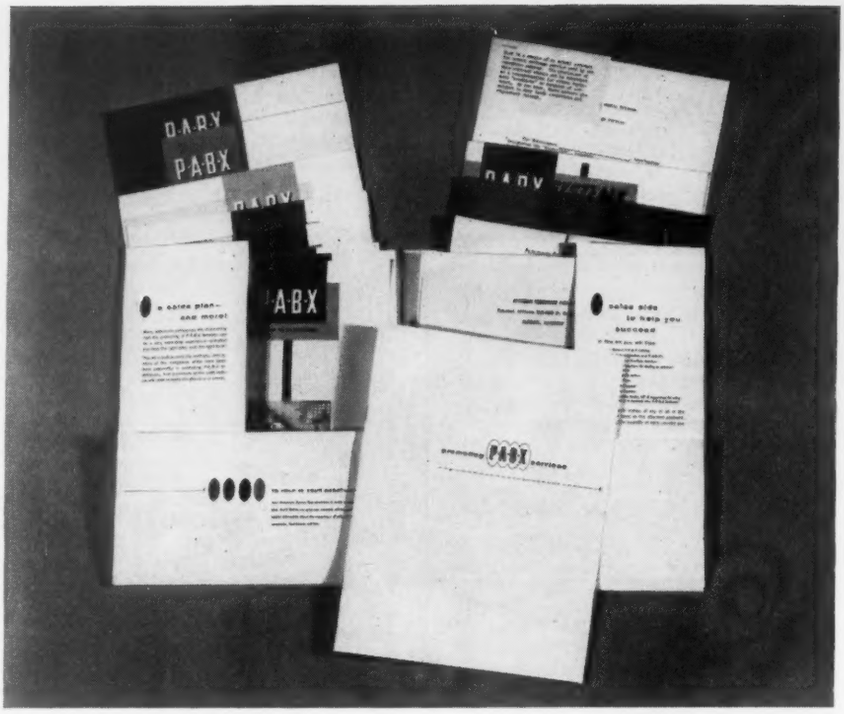


"P-A-B-X Sales Kit," designed to help telephone companies increase revenues by expanding use of P-A-B-X's, is available from Automatic Electric Sales Corp., Chicago, Ill.

Continued from Page 78

chief executive officer of the company. Joseph V. Smith, chairman of the board of directors and an executive of the Hubbard Co. for nearly 40 years will retire. Mr. Dyson will become chairman of the board. The company will continue its leadership in the various fields in which it operates. The present organization will continue to serve the many companies which have been customers using Hubbard products.

Automatic Electric Offers Service-Selling Program

TO HELP telephone companies increase their revenues by expanding use of P-A-B-X's (Private Automatic Branch Exchanges), Automatic Electric Sales Corp., recently announced preparation of a "P-A-B-X Sales Kit," comprising all the material a telephone company will need to promote P-A-B-X and Auxiliary Services.

Included in the Kit are: a brochure to be used in mail or personal selling, suggested sales letters, a complete catalog of Automatic Electric P-A-B-X's, indivdual circulars on various types of P-A-B-X's and their auxiliary services, a survey form to be used in determining customers' requirements, for telephone and auxiliary services, and typical proposals and contract forms — as well as a Sales Guide outlining the procedures followed by telephone companies which have been outstandingly successful in promoting these services.

Telephone companies seeking sources of additional revenue are invited to request the P-A-B-X Sales Kit from Automatic Electric Sales Corp.

Copperweld Transfers Leach, Frick and Froelich

F. E. LEIB, manager of sales of the Wire & Cable Division of Copperweld Steel Co., has announced that A. B. Leach has been transferred to San Francisco as district manager for the states of California, Arizona, Nevada and Utah. He succeeds Harry J. Billica, who has retired. Prior to his new assignment, "Bud" Leach covered the Chicago territory.

Walter H. Frick, formerly district service manager and traffic manager at the Wire & Cable Division's home office in Glassport, Pa., has replaced Mr. Leach in Northern Illinois and Southern Wisconsin. Mr. Frick will make Chicago his headquarters.

John C. Froelich has taken over the territory handled by the late Robert A. Sovik. It embraces most of the State of New York and the counties of Bradford, Susquehanna and Tioga in Pennsylvania. Before this transfer, Mr. Froelich covered the states of Arkansas, Louisiana, Mississippi, and the western half of Tennessee.

STROMBERG-CARLSON®

transmitter

Published by the makers of Famous XY® Equipment

VOL. 3, NO. 5 AUGUST, 1954

Beanstalk in the Hoosier State

What's behind the boundless energy of United Telephone Company of Indiana, Inc.

In the late 1920's, a man from Abilene came to Indiana and began to sow the seeds for a consolidated group of Independent telephone companies.

Like the beanstalk in the fairy tale, United Telephone Company of Indiana sprang up almost overnight, and by 1931 Mr. C. L. Brown had purchased ten companies for the parent company, United Telephone and Electric Company, of Abilene, Kansas. In that year a large group of properties operated by Interstate Telephone and Telegraph Company was acquired from James Goodrich, former governor of Indiana, and "United Telephone Companies, Inc." was formed as a merger of 56 different companies operating 22,000 stations. In 1940 the name was changed to "United Telephone Company, Inc.," and in 1953 it became "United Telephone Company of Indiana, Inc."

In 1929 this company served about 2500 customers. Today, United Telephone Company of Indiana operates nearly 60,000 telephones in 74 exchanges, and boasts an aggressive, forward-looking organization. Its general offices are in Warsaw, Indiana, and it is the second largest independent telephone group in the state, serving more rural customers than any other Indiana company.

Third in Size

The parent company, now known as United Utilities, Inc. of Abilene, Kansas is the third largest independent telephone group in the U. S., supplying public services to some 1,385 communities in 12 states.

Top-ranking official of the United system in Indiana is Ralph F. Lucier, an Abilene native who went to work with the local Abilene telephone company after World War I. He rose to become district manager for the United system in Kansas, then was sent to manage the new proper-

R. F. Lucier, president and general manager.

Chief Engineer R. E. Daniel is shown with Verna Wagner, chief operator at Winamac exchange, during dinner party given by the company in honor of her retirement.

(Left) H. D. Clingenpeel, general commercial superintendent, and (right) G. A. Steele, vice-president and secretary-treasurer.

(L. to R.) District Managers Floyd Burkett (Plymouth), W. D. Sadler (Warsaw) and R. S. Shoemaker (Portland).

(L. to R.) Richard Stoops, assistant treasurer; J. C. Cluen, general traffic superintendent; H. D. Clingenpeel, and F. J. Eherenman of commercial department.

ties in Indiana. Today R. F. Lucier is President and General Manager of the United Telephone Company of Indiana, Inc.

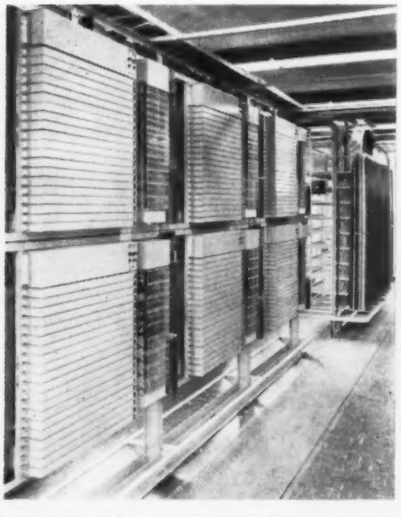
160-Man Staff

R. E. Daniel, chief engineer, uses a field force of 160 plant employes to keep the United system functioning efficiently. He was district manager at Knox in 1931 when Knox became a part of the United system, and later served as district manager at Portland and at Plymouth until 1946 when he became general plant superintendent for the system. He became chief engineer in 1947. He is the son of Lewis E. Daniel, a pioneer in the telephone industry who was with the old Winona Telephone Corporation, operating in north-central Indiana in the early 1900's.

With its general offices in a city that just celebrated its 100th anniversary last month, and with a history of its own that spans 25 years, you might expect United Telephone Company of Indiana to rest on its laurels — but it doesn't. Typical of the progress this system is bringing into northern and central Indiana is the 1800-line XY system already in use at Plymouth. It provides all 1115 stations with modern, trouble-free XY dial service. Equipment includes an 8-position No. 3 Stromberg-Carlson switchboard.

Tall and healthy, this "beanstalk" telephone system is growing stronger internally, through its excellent employe relations and an enthusiastic, practical plan for bringing the best modern telephone service to its many subscribers throughout Indiana.

Marie Jellison, traveling chief operator and president of the Indiana Pioneer Association.



Part of Stromberg-Carlson XY Dial equipment in use at Plymouth, Indiana.

United Telephone Company plant employes cultivated these beards in honor of Warsaw's 100th anniversary. Telephone company joined in Centennial celebration July 4-10.

STROMBERG-CARLSON transmitter

San Francisco Sales Engineers Keep Pace with Booming West

Continuing the series of biographies of Stromberg-Carlson branch office Sales Engineers, we move to the West Coast Office. Spurred on by branch manager J. P. Galligan, whose example in customer service is hard to match anywhere, these men practically live on planes as they shuttle from Alaskan fiords to Nevada's burning sands.

R. Fred Fairly

Born in Oakland, California, with early schooling in Long Beach and college at Texas Tech, Fred Fairly made many friends in each location. Some of them are now in positions of

responsibility in the telephone operating field, and lean heavily on Fred's good judgment in finding solutions for their present problems. For Fred, also, has grown up in the telephone business.

During summer vacations from high school and college he was employed first by the Associated Telephone Co. of San Bernardino, Calif., and later by the Southwestern Associated (now General Telephone Company of the Southwest) in their Lubbock district. His first full time job was with the Haskell (Tex.) Telephone Co.; then plant engineering at Lubbock and Santa Monica, Calif. In 1942 he started with Stromberg-Carlson in Research, moved to Sales (Northwestern states) and has been Sales Engineer at the San Francisco Branch since July 1947.

Fred is married (Mary Dooley) and has two daughters: Linda Nell 17, and Rebecca Ann 3. He is a registered professional Engineer (Calif.), Member A.I.E.E. and Armed Forces Communication Association. Hobbies? Next to photographing XY exchanges, Fred likes to go fishing with their managers.

Morris L. Hansen

Ever wonder if you wanted to live in Alaska? Morris Hansen can tell you what it's like. For five years he was Telephone Superintendent of Ketchikan Public Utilities, and still raves about the wonders of Alaska.

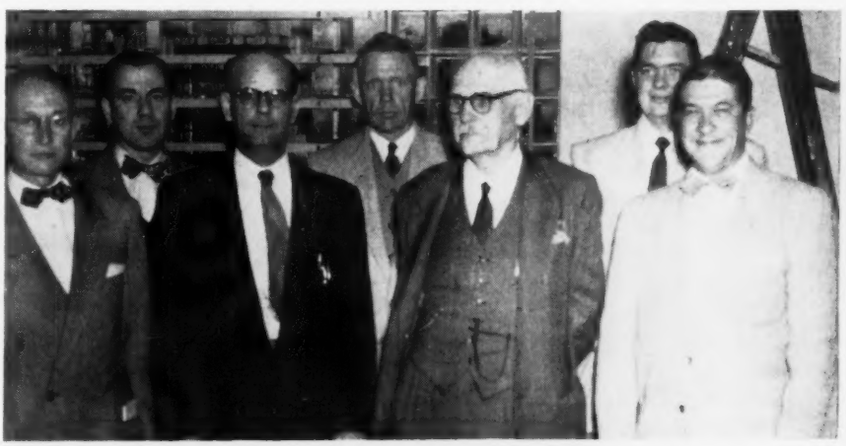
Born in South Dakota, he went to high school and college in Iowa, with post graduate work at La Salle University in Chicago.

Before Morrie succumbed to the life of the Northwest he had become well grounded in telephone operations, working for Northwestern Bell Telephone Co., the Western Light and Tel. Company of Kansas City, and at Ash Grove and West Plains, Missouri. Alaska called him in 1942 and has never completely let him go. One of his proudest moments was when Ketchikan cut over its fine new XY exchange recently.

Morrie is sales engineer for Washington, Oregon, Idaho and Montana. Now somewhat "settled" in San Ma-

teo, Calif., Morrie and his lovely wife Dorris and two sons: Gary 12, and Gregg 8, make the most of their limited time together. But when duty calls, Morrie goes: if the planes aren't flying, he has his own private pilot's license. Look up — he may be dropping in some time!

Leeds, Alabama Celebrates Cutover to XY Dial



Present at Feb. 20 cutover of Leeds (Ala.) Telephone Company to XY Dial were: (Front, l. to r.) R. A. Bailey, president of telephone company; Frank Nelson and C. Ohme, Alabama Public Service Commission; Carl M. Smith, vice-president and treasurer of telephone company; (rear) Fred Clark and Fred Thomas, McRary Engineering Co.; Robert Holt, Stromberg-Carlson.

STROMBERG-CARLSON transmitter

Frequency Marking Advantages Easily Obtained with XY®

by James D. Confeld, Systems Engineering

More and more new dial offices are being installed with equipment arranged for "terminal-per-station" method of operation. In this method each party line *station* is assigned its own connector terminal, instead of each party *line* being assigned a terminal with selection of the party by a suffix digit. With the growing trend to "2-5" numbering this has the advantage that one office code will serve 10,000 stations in a terminal-per-station office but only 1,000 lines in a terminal-per-line office. In terminal-per-line operation each line uses up 10 numbers whether all of the ten stations are equipped or not. In terminal-per-station operation only as many numbers are used up as there are stations actually equipped.

This method also offers a great advantage in flexibility in that a subscriber may be changed to a different cable pair or moved from one party line to another without changing his directory number. Also, service can be upgraded or downgraded (multiparty to single party service and vice-versa) without number changes. This flexibility is reflected in fewer directory changes, and less equipment and/or operator time required for intercept service.

It was with the idea of making the terminal-per-station method of operation even more efficient and flexible that the Stromberg-Carlson "Frequency Marking" scheme was developed. Instead of restricting all parties of a particular frequency to specific connector groups the Stromberg-Carlson system allows any party line station to be assigned to any terminal in any group. Thus a much more uniform fill of the connector groups can be maintained and a subscriber's ringing frequency can even be changed without changing his directory number.

Uses XY 4th Wire

By means of the inherent 4th wire of the XY system, each connector terminal can be marked individually for any ringing frequency. Thus, by simple changes in strapping, practically all subscriber shifts within the office area can be handled without changes in directory number and a very efficient fill of connector terminals be maintained.

The advantages listed above are not limited to large size offices so that, from an engineering point of view, *all* offices should be of the terminal-per-station type. This type operation is *definitely recommended* whenever it is expected that an office will grow beyond 1000 lines.

It should be emphasized that since the HS lead or "4th wire" is an integral part of the XY System, all the advantages of frequency marking terminal-per-station operation can be realized at much lower cost than with systems not having this 4th wire as an inherent part of the equipment.

All XY terminal-per-station installations are engineered for this feature, and the experience of operating companies using this method of operation has proved its value.

Marking Leads Grounded in Sequence

Common ringing relays (Fig. 7, facing page) are provided on the power board which serve to place, in time sequence, the five ringing generator frequencies onto generator leads serving the connectors. All five generators appear in time sequence on each lead. One lead is furnished for each five connector shelves (1st through 5th connector groups; 6th through 10th connector groups, etc.). Marking leads (M1A, M1B, M2, M3, M4, M5) are also grounded in sequence which serve to energize strapped sections on the connector terminal blocks. Each connector terminal block has a strapped section which corresponds to one of the ringing generator frequencies. In this manner, the strapped section (Fig. 5) corresponding to generator 5 is grounded at the same time that generator 5 appears on the common generator lead. Cams on the machine interrupter drive the ringing relays and in turn ground marking leads M1A, M1B, M2, M3, M4 and M5 while the corresponding generator appears in sequence on the common generator lead.

Even Distribution of Load

The actual time position of any particular generator is different on the common generator leads to each of the thousands groups of connectors, and the corresponding marking leads are slipped in the same manner in order to distribute the ringing load uniformly over the whole office. For example, while Generator 5 is being rung on the connectors of the 1st thousands group and M5 is grounded to the generator marking block of the 1st thousands group terminals, Generator 4 is being rung on the connectors of the 2nd thousands group and M4 is grounded to the generator marking block of the 2nd thousands group terminals, Generator 3 and M3 to the third thousands group, etc.

If a particular connector terminal is to be rung with Generator 5, a generator marking strap is placed from the HS contact of that terminal to the strapped section corresponding to Generator 5 (Fig. 5). Thus, when a connector switch cuts through to that terminal, the BT relay (Fig. 4) will be operated by the ground appearing on the HS lead during the same period that Generator 5 is appearing on the generator lead. The proper generator will be sent through the tripping relay (RT) out to the line.

Use Any Open Frequency

It can be seen from the above that simply by moving the generator marking strap, the terminal can be rung with any one of the 5 generators. If a subscriber moves within the office area, and there is any unused frequency on the new line to which he will be connected, he can be given service immediately without changing his directory number by changing the generator marking strap and the connector terminal-to-bunching block jumper (Figs. 5 & 9).

Works with all Ringing Systems

It should be pointed out that although the industry has come to

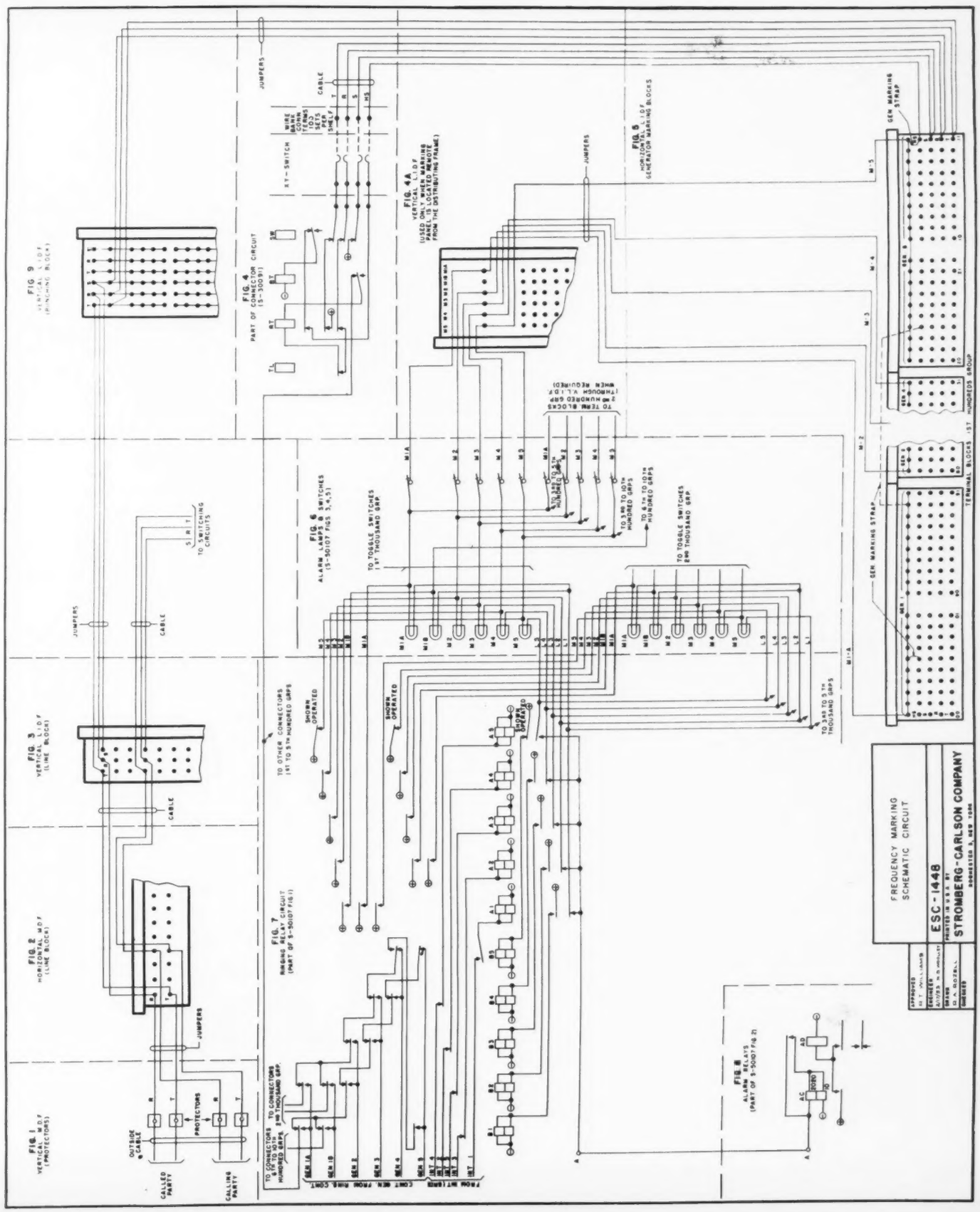


FIG. 1 VERTICAL I.D.F. (PROTECTORS)
FIG. 2 HORIZONTAL I.D.F. (LINE BLOCK)
FIG. 3 VERTICAL I.D.F. (LINE BLOCK)
FIG. 4 PART OF CONNECTOR CIRCUIT (S-50091)
FIG. 4A VERTICAL I.D.F. (USED ONLY WHEN MARKING FREQUENCY AT A POINT REMOTE FROM THE DISTRIBUTING FRAME)
FIG. 5 HORIZONTAL I.D.F. (GENERATOR MARKING BLOCKS)
FIG. 6 ALARM LAMPS & SWITCHES (S-50107 FIGS 3,4,5)
FIG. 7 RINGING RELAY CIRCUIT (PART OF S-50107 FIG 1)
FIG. 8 ALARM RELAYS (PART OF S-50107 FIG 2)
FIG. 9 VERTICAL I.D.F. (PUNCHING BLOCK)
CALLED PARTY
CALLING PARTY
OUTSIDE CABLE
PROTECTORS
JUMPERS
CABLE
S.R.I.T. TO SWITCHING CIRCUITS
TO OTHER CONNECTORS 1ST TO 9TH HUNDRED GRPS
SHOWN OPERATED
TO TOGGLE SWITCHES 1ST THOUSAND GRP
TO TOGGLE SWITCHES 2ND THOUSAND GRP
TO 2ND TO 10TH HUNDRED GRPS
TO 3RD TO 10TH HUNDRED GRPS
TO 6TH TO 10TH HUNDRED GRPS
TO 3RD TO 9TH THOUSAND GRPS
TO 10 TENS BLOCKS THROUGH HUNDRED GRP WHEN REQUIRED
WIRE BANK CONN. TERMS 100 SETS PER SHELF
XY-SWITCH
GEN MARKING STRAP
TERMINAL BLOCKS 1ST HUNDREDS GROUP
FREQUENCY MARKING SCHEMATIC CIRCUIT
ESC-1448
STROMBERG-CARLSON COMPANY

Frequency Marking Schematic Circuit

STROMBERG-CARLSON **transmitter**

Manilla, Iowa, Well Served by XY

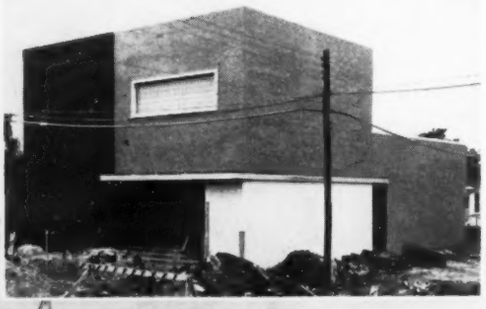
Ever since Manilla, Iowa cut its 180 lines over to Stromberg-Carlson XY Dial in February things have run smoothly for John Paul Jones, owner and manager of the telephone company.

At left we see him with his grandmother, Mrs. J. S. Hardgrove, at one of the bays in their equipment room. This successful conversion to dial operation was made possible by two things — careful and determined planning by Mr. Jones, and a helping hand from the Stromberg-Carlson Credit Corporation.

General of the Southwest Builds!

TOP: General Telephone Company of the Southwest will house new XY Dial equipment in this modern new brick building at Raymondville, Texas. Cutover, slated for December, will place over 1000 lines in service.

MIDDLE: New "1½-floor" air conditioned building at Port Lavaca can be expanded to two full floors when needed. It will house new XY dial equipment to be cut over this winter.



BOTTOM: New general office building at San Angelo will feature plate glass walls on north and south, light-colored brick on east and west. Floor space: 65,430 square feet. Courtesy of "The Roundup" publication of General Telephone Company of the Southwest, is gratefully acknowledged.

Frequency Marking

(Continued)

know this method of operation as "Frequency Marking," it is not limited to frequency ringing. Superimposed and code ringing may also be used with this system and the same flexibility, efficiency and economy can be obtained.

By the use of specially coded marking pulses and a modified connector circuit, one- and two-ring service may also be provided.

Service Interruptions Easily Isolated

An alarm system is normally furnished consisting of a marking panel (Fig. 6) on which are mounted 5 alarm lamps and associated toggle switches for each 100 connector terminal group, and a common set of alarm relays (Fig. 8). If a foreign ground or cross occurs on an HS lead or a marking lead, the alarm lamp corresponding to the generator in the hundreds group in which the fault is located will light. This lamp lights in series with an alarm relay which locks up a second relay to send a major alarm.

By operating the toggle switch associated with the lamp, the fault will be isolated and the rest of the office may function normally. Only the one generator in the particular hundreds group affected by the toggle switch will be out of service. When the trouble is found and cleared, the toggle switch is restored and normal operation resumes.

Published by Stromberg-Carlson . . . makers of Famous XY Equipment

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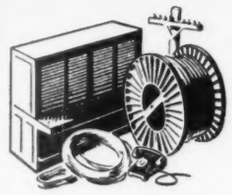

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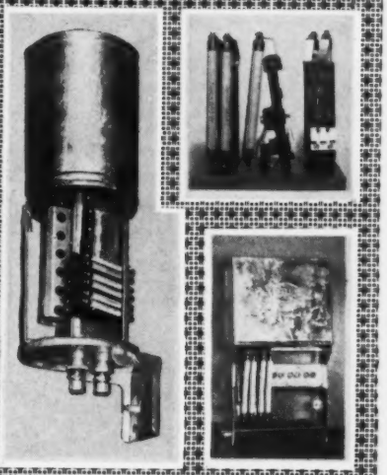

Cook outdoor protection is just one of the many first-line class of products listed in detail in Suttle catalogs. And always with prices up to date. Always keep the Suttle catalog handy!

S-20V CABLE TERMINALS

Like other Cook protection using interchangeable H-20 protector units, you never tie up money in useless fuses and discharge blocks when you use these terminals on your plastic cable. Nor does any other system provide easier replacement of burned-out protection.

5S-LINE U-TYPE PROTECTOR

The handy miniature application of the S-20 principle that is so useful and so efficient at the end points of cable distribution, or congested drop wire areas.

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS

The Back Of The Book

By JOHN G. REYNOLDS

Cut-off Confusion

IT MUST HAVE been a hard day at La-Grange Office of Illinois Bell, we gather from a story in its new publication *Silent Ring*. At any rate, a party reported he had been cut off during a long distance call.

"I'm sorry sir," acknowledged the operator. "If you will call up, they will hang you back."

Linguistic Timing

SPEAKING OF cut-offs, a friend reports, a Chicago long distance operator was given a nice problem recently. On any cut-off it's the practice not to resume timing the call until the parties have finished discussing the cut-off. The operator monitors the call so that the customer may have all his comments "on the house."

Somehow the operator managed to cut off the customer. She immediately restored the connection and went in to monitor the call for timing. That's where her problem began.

The two parties were conversing in a foreign language. But the resourceful operator made up her own dialogue and allowed what she considered a sufficient interval before starting to time the call again.

Wonder Drug

A SOUTHWESTERN BELL commercial manager has discovered a way to relax his employes when customer questions and complaints have been a bit too hot and heavy. He got a brown, quart-sized drug bottle and filled it with "patience pills" and left it in a handy place. The "pills" (candy drops) apparently did wonders for morale!

Courtesy On The Highway

IT'S AN ODD QUIRK of nature, but a grim fact that many persons step out of character when they get behind the wheel of an automobile. And, forgetting the elementary rules of courtesy costs our nation some 35,000 to 40,000 deaths annually. Almost another 2,000,000 are injured, some maimed for life.

Actually, all that is needed to eliminate most of the trouble is a little consideration for the other fellow. It is here that the telephone company driver plays his part so well. His performance continually stands out as an excellent example of courtesy behind the wheel. There is no compromise in his makeup, nor will there be, with discourtesy — the killer.

Youthful Curiosity

THE REDWOOD GAZETTE of Redwood Falls, Minnesota sees the following incident as being maybe just a little characteristic of the younger generation: During the telephone open house, a group of school children had reached the point in the tour where they heard the story of the company trucks, the tools they carry, and their importance in maintaining telephone service. Finally, the lecturer called for questions, and after a silence, got one: "Mister," inquired a lad in the back row, "How fast will those trucks go?"

Revenue Booster

DON'T underestimate our old friend, the coin telephone, as a source of increased long distance revenues. Although there are 800,000 of them, this number represents only two percent of the total telephones in service. Yet, these coin telephones bring in seven percent of the total Bell System revenues. You can take the mony from directory advertising, add private line telephone, private line teletypewriter and the TWX revenues — and the contribution made by coin telephones exceeds the total.

In this connection, did yon know that the first telephone "booth" was made of blankets. In his book, *Exploring Life*, Thomas A. Watson, Bell's assistant, relates that in one of the telephone inventor's early demonstrations there was to be a call placed by him from New York to Watson in Boston, on the night of April 2, 1877.

In those days, it took a pair of strong lungs and a loud voice to carry on a telephone conversation that could be heard and understood. To keep his shouting from annoying his landlady, Mr. Watson "cast about for some device to deaden the voice." He goes on to say: "Time was short and appliances scarce, so the best I could do was to take the blankets off our beds and arrange them in a loose tunnel on the floor, with the telephone tied up in one end and a barrel hoop in the other end to facilitate my access to the mouthpiece."

Abbreviation Experts

FOR ALMOST the first time since 1878, when New York City's first telephone directory appeared, a new book is out with fewer pages than its predecessor. At the same time the 1954-55 Manhattan directory contains approximately 6,000 more listings than did last year's book. The explanation of this seeming contradiction lies in the triumph of a group of abbreviation experts. Their job is to hammer, clip and squeeze until, if possible, each listing fits into a single line. Among their short cuts you will find dealers in linolm, stks and bonds, greetg cds, intr decratrs and dmnd ctrs and the like. Reading over this list we cannot help but feel that the abbreviation experts have—dne a good jb.

Give Rural America More Service at Lower Cost!

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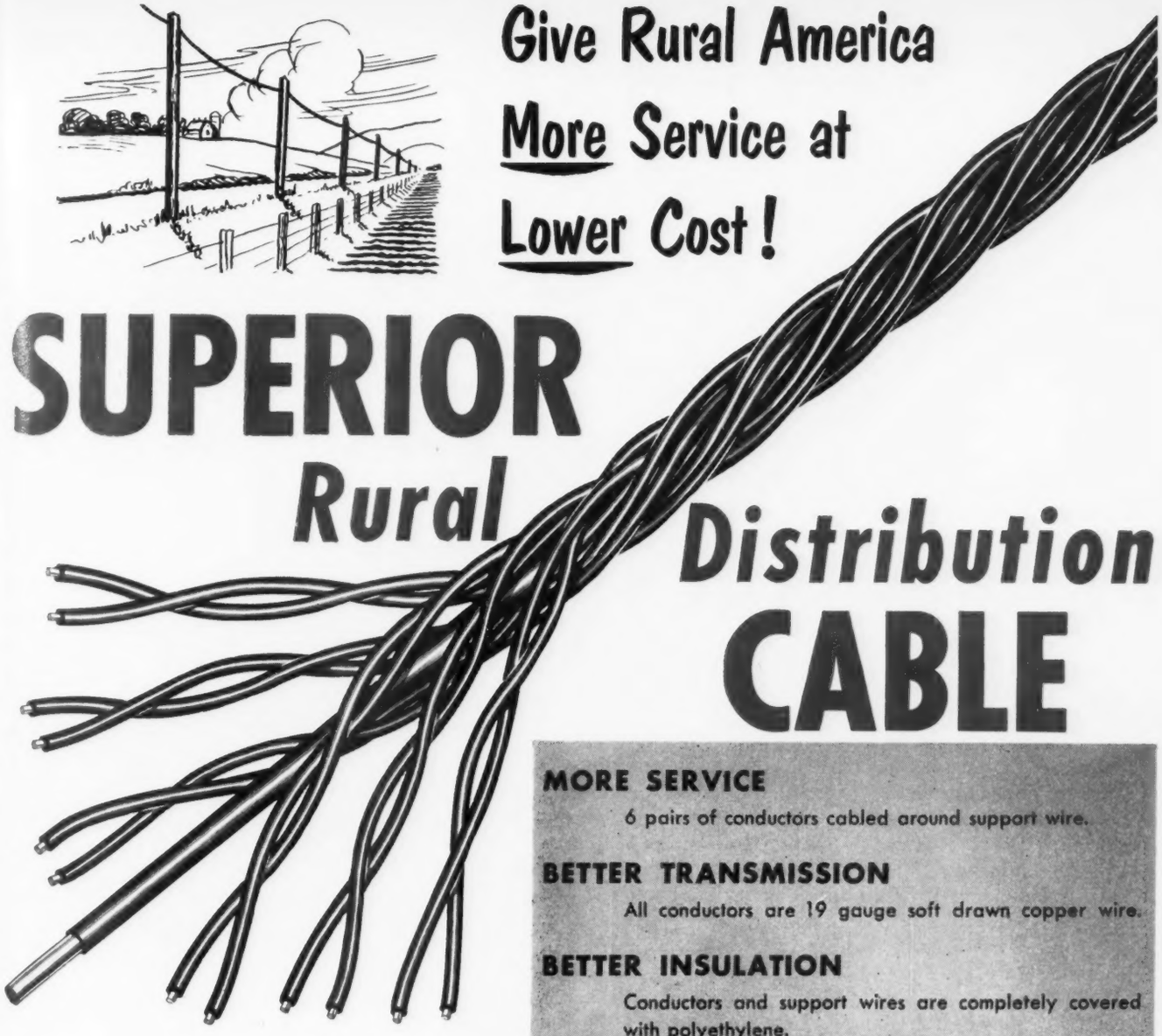

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BETTER INSULATION
Conductors and support wires are completely covered with polyethylene.

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Every circuit easily accessible. New stations readily added.

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Extra high strength (1800 lbs.) galvanized steel support wire to withstand rough weather. Makes longer spans possible.

LOWER COST
Low initial cost . . . rapid and inexpensive installation.

Use SUPERIOR Rural Distribution CABLE to add new circuits to existing pole lines or to construct new installations—no crossarms are required. Minimum tree-trimming.

Use SUPERIOR for branches off of existing main lines of open wire and cable.

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Give Rural America More Service at Lower Cost...

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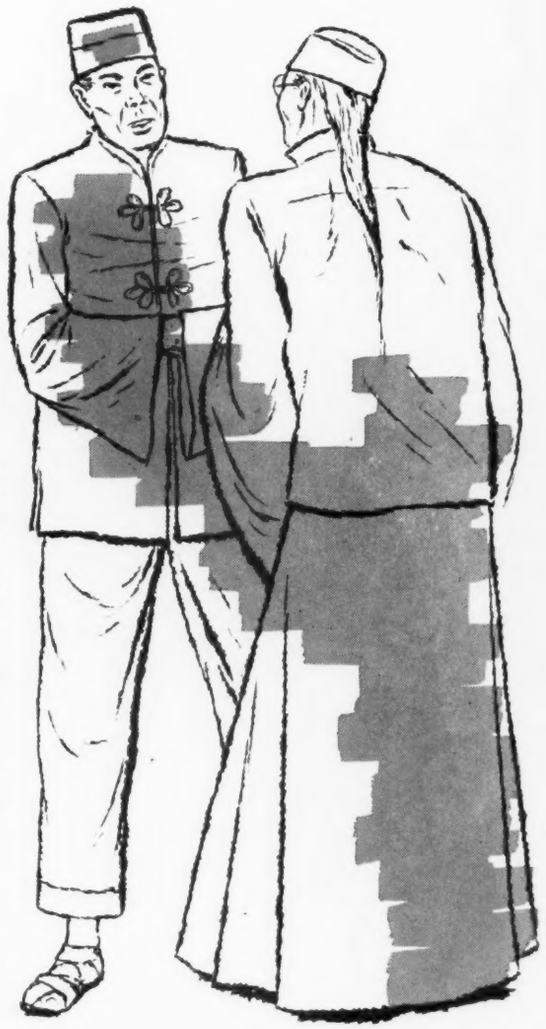
電話書

ANCIENT CHINESE PROVERBS PROVIDE WESTERN MAN WITH A VAST TREASURY OF WISDOM

When error is committed...

good advice comes too late



After final copy for your directory has gone to the printer it is too late to take corrective measures that will insure the accuracy and attractiveness of, and increase the net profit from, that directory.

In order to be sure that your telephone directory will be accurate, attractive and profitable, you must follow a proven publishing procedure.

Our Complete Directory Service Plan is now being employed with remarkable success by independent telephone companies which serve more than 4400 communities. This plan has been in use during good times and bad—in large communities and small—all across the nation. Because it has been proved through use under all kinds of circumstances, you can be certain that it will work successfully for you.

By employing our Complete Directory Service Plan, you can remove the element of doubt concerning the accuracy, attractiveness and profit of the next and subsequent issues of your telephone directory. And, at the same time you can forever relieve your company of all the burdensome details connected with publishing.

Ours is the best equipped telephone directory publishing organization in the United States. Let our representative call and explain the many advantages which your company will enjoy through the use of our service.

Simply write or telephone our nearest office. Our representative will call at your convenience to answer all your questions without any obligation whatsoever.

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